THE IRON TRADE REVIEW

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PROMINENT COMPANIES ARE REPRESENTED

In Pig Iron Buying---Railroad Policy Not Clearly Developed --- Independents Seek Views of Jobbers

The elections have been a disturbing factor this week, and the atmosphere has not sufficiently cleared to justify any definite prediction as to prospects for new business, but in some sections, especially in New York, the sentiment after the election is very cheerful.

Railroad Buying

Definite developments in regard to the policy of the railroads is still lacking. The Pennsylvania and New York Central rail orders are expected to be placed within a week or 10 days, as these roads have notified the mills that their estimates are completed. The two orders for next year actually booked, are for the Norfolk & Western and the Erie, each for about 32,000 tons. Structural orders from railroads are coming in somewhat more freely, and it is believed that car orders of fair size will soon be placed.

Pig Iron Output

The production of coke and anthracite pig iron for October is 2,086,205 tons, compared with 2,048,461 tons in September, an increase of 37,744 tons, but as October had one more day than September, the daily average production in October was less than for September by 985 tons. The steel companies making pig iron for their own use showed a greater reduction than did the merchant stacks.

Policy for Jobbers

Leading independent manufacturers are quietly considering the policy they will adopt in their future dealings with jobbers. Views of the jobbers have been requested, and various suggestions as to the method of determining the differentials have been made. Representatives of the Carnegie company state that they are entirely satisfied with the progress that has been made with warehouse business. It seems probable that the policy will be further developed.

Pig Iron

Although pig iron business is apparently not very active in most centers, some large transactions have taken place, including the purchase of a round tonnage by the leading radiator interest. This purchase was for delivery in the second quarter of next year, and closely follows the recent heavy purchase for the first quarter. The company has in some cases requested that shipments be anticipated, and is said to be extremely busy. Other important transactions of the week include the purchase of about 8,000 tons of gray forge and malleable iron for first half delivery by the Westinghouse Air Brake Co.; 1,500 tons by the leading pump interest, and 1,000 tons by a Rochester stove maker. Inquiries for a heavy tonnage of basic are still pending, and the relations of the manufacturers of basic seem to be unusually harmonious, while prices are hardening.

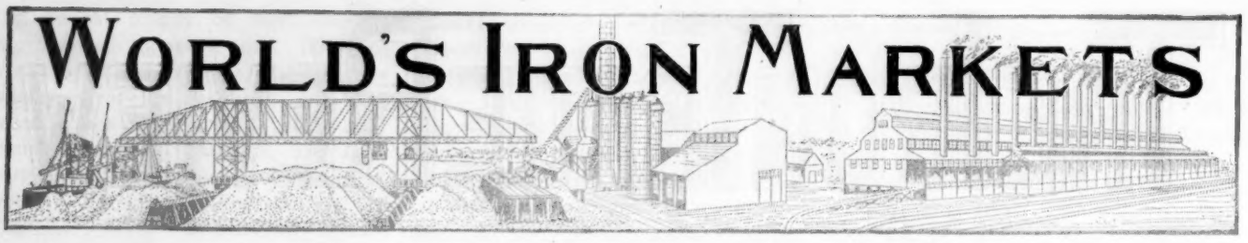
Cast Pipe

The Standard Cast Iron Pipe & Foundry Co. is low bidder on 4,000 tons of pipe for metropolitan boroughs, and was awarded a contract for 900 tons for Providence. The leading interest has taken 1,500 tons for the city of Havana, and R. D. Wood & Co., 1,300 for Pawtucket, R. I. Recent exports amount to 4,000 tons. Shafting prices, which have been very low and irregular, show some improvement, and automobile manufacturers are specifying somewhat more freely, and releasing held-up tonnage. An independent company which recently sold a large tonnage of steel bars for the Chicago district at 1.35c, Pittsburg, is now understood to be quoting the regular price, 1.40c, Pittsburg, which is firmly maintained by the leading interests. The plate market seems to be firm so far as the most of the companies are concerned, but a southern Ohio concern is still quoting 1.35c, Pittsburg, on sizes which it makes. There is some weakness in blue annealed sheets. Although the wire business is good, quotations of $1 50 on wire and $1.70 on wire nails are being shaded by some mills. The tin plate business is fair, and some mills recently closed for repairs are again in operation.

Coke

Coke transactions include one of 4,000 tons per month for one year, beginning Jan. 1, for Wise county furnace coke. Several sales are now being negotiated for first half and for all of next year. Some reports have recently been circulated evidently with the deliberate intention of depressing the market, but in spite of these efforts, quotations are fairly firm.

WORLD'S IRON MARKETS



PITTSBURG

Feeling More Optimistic—Not Much Buying of Pig Iron.

Office of THE IRON TRADE REVIEW,
510 Park Bldg., Nov. 8.

There has been considerable buying in the local iron and steel market during the past week for delivery over the early part of next year and the nature of the inquiries for billets, sheet bars, steel bars, sheets, tin plate and wire products which have appeared during the past few days have given the market a much stronger tone. While there is nothing in the situation that would indicate that even a moderate buying movement has been started, manufacturers are more optimistic and consumers are showing more interest and in many instances are quietly placing orders involving fairly heavy tonnage. The increased buying for 1911 delivery is perhaps more noticeable in the market on tin plate. In this branch, most of the larger buyers have already placed orders covering their 1911 spring requirements and as a result some of the tin mills which were closed recently will be started again as soon as repairs are made. Some fairly large contracts for sheets have also been made, but price concessions are still being reported. Some sheet mills are four weeks behind in shipments. Actual bookings for wire and nails are heavier, but quotations of $1.50 on plain wire and $1.70 on wire nails are being shaded.

Some large inquiries for semi-finished steel for delivery next year have appeared and some contracts have been placed, but makers are not accepting business for delivery very far ahead at today's prices. While the bulk of new business in steel bars is for immediate shipment, several orders for first quarter shipment are noted. Additional inquiries for standard rails have appeared, but it is not believed that the larger trunk lines will cover for their full requirements until it is definitely decided what action is to be taken regarding the proposed advance in freight rates. Advance information is that some fairly large contracts for rolling stock may be expected in the near future. Additional inquiries for cars are reported, but details are lacking, and it is generally understood that many of the rail and car awards have been held up pending the outcome of the election. The general offices of a number of the larger steel companies were closed at 1 o'clock this afternoon on account of the election.

The principal transaction in the pig iron market during the week was the purchase of 8,000 tons of low silicon malleable and gray forge iron by the Westinghouse Air Brake Co. for delivery at Wilmerding, Pa., over the first half. The iron will come from valley furnaces, but few details have leaked out regarding prices. Considerable interest is centered in the basic situation and the general asking price is $13.50, valley, for prompt shipment, although the last sale reported was on a basis of $13, valley. The coke market is very quiet. Some exceedingly low quotations are reported in connection with recent sales of prompt furnace coke, but special conditions are involved.

Pig Iron.—The general tone of the local pig iron market this week seems to be somewhat firmer. Prices are not any higher and there has not been a great deal of buying, but consumers continue to show a great deal of interest in the situation and the feeling among furnace interests is that there will be at least a moderate buying movement shortly. The principal transaction in this market during the week was the purchase of about 8,000 tons of gray forge and low silicon malleable iron for first half delivery by the Westinghouse Air Brake Co. This company put out an inquiry a few weeks ago for "1,000 tons and upward" for each grade. Few details have leaked out so far regarding prices, but it is generally believed that the iron will come from valley furnaces. The Wheeling Steel & Iron Co. this week started its furnace at Martins Ferry on Bessemer. The furnace had been banked for some time.

The basic situation is still attracting considerable attention. The general asking price of furnacemen is $13.50, valley, for early delivery, notwithstanding that the last sale reported was on a basis of $13, valley. So far no sales have been made at the higher price, but it is pretty well established that actual inquiries have not brought out any business at low prices. While there is comparatively little written inquiry for basic pending, users are quietly sounding the market and some companies will be obliged to enter the market in the near future. It is understood that the inquiry of the Andrews Steel Co., Newport, Ky., for 6,500 tons of basic has been withdrawn.

A sale of 2,500 tons of No. 2 foundry iron for delivery over the first half of 1911 at $14.25, valley, is noted. The last previous sale of this grade for first half delivery was made at $14.50, valley. Reports that $14, valley, has been done for first quarter delivery have not been confirmed. Odd lots of foundry iron for immediate shipment have been sold on a basis of $13.75, valley. Bids have gone in on the inquiry of a consuming interest at Erie, Pa., for 7,300 tons of foundry iron.

There has been a sale of 500 tons of Bessemer for delivery at Erie, Pa., over the next six weeks at $15, valley, and the market is quotable at this figure for prompt and first quarter shipment. Although there is no written inquiry pending, users are sounding the market with a view of covering for their first quarter and first half requirements. Demand for gray forge and malleable is light and reports of low prices are heard, although confirmation is lacking. We quote the market as follows:

Pig Iron Prices.

(Prompt Shipment.)

Bessemer, valley	$15.00
Bessemer, Pittsburg	15.90
Basic, valley	13.25
Basic, Pittsburg	14.15
No. 2 foundry, Pittsburg	14.65
Gray forge, Pittsburg	14.15
Malleable, Pittsburg	14.40

(First Quarter.)

Bessemer, valley	$15.00
Bessemer, Pittsburg	15.90
Basic, valley	13.50
Basic, Pittsburg	14.40
No. 2 foundry, Pittsburg	15.15
Gray forge, Pittsburg	14.40
Malleable, Pittsburg	14.90

Ferro-Alloys.—Users of ferro-alloys are negotiating for their requirements over the first half of next year, but there has been comparatively little trading in this market during the past week. Odd lots of ferro-manganese have been sold at $38.75, Baltimore, although in a few exceptional cases this price has been shaded 25 cents. The shortage of 50 per cent ferro-silicon for immediate shipment is still being felt in this market and premiums of $1 and $2 a ton are being paid in some instances on small lots for early shipment. Scattered sales of domestic ferro-silicon are noted.

We quote ferro-manganese at $38.75, Baltimore, for prompt, and $39, Baltimore, first quarter of 1911. The freight rate from Baltimore to Pittsburg is $1.95 per ton.

Fifty per cent ferro-silicon is quoted at $57.50 to $58, Pittsburg, for first half, with an advance of from $1 to $2 a ton for immediate shipment; domestic, 12 per cent, $25; 11 per cent, $24; 10 per cent, $23, f. o. b. Jisco and Ashland furnaces. The freight rate to Pittsburg is $1.90. The foreign grades are held at $1 or more a ton over domestic prices.

Plates.—A more optimistic feeling is noted in the market on plates, although actual bookings are little, if any, heavier than last month. Some of the car companies are specifying more freely against running contracts and as a result some of the plate mills which were closed down a month ago have been started this week. It is expected that developments during the next 10 days will enable the trade to get a more definite line on what may be expected in the way of equipment orders. It is known that several of the large transportation companies have practically decided upon their requirements and it is expected that definite action will be taken following the election. The Pittsburg, Shawmut & Northern railroad is understood to have renewed its inquiry for 2,300 all-steel coal cars and 500 box cars and that an award will be made shortly. The Standard Steel Car Co. will build 400 all-steel hopper cars for the Jamison Coal & Coke Co., Pittsburg. Other new projects involving fairly heavy tonnage of plates, noted recently, are still pending. We quote the market as follows:

Tank plates, ¼ inch thick, 6¼ to 100 inches, 1.40c. Extras are as follows, per 100 pounds: Boiler and flange steel plates, 0.10c; A. B. M. and ordinary firebox steel plates, 0.20c; still bottom steel, 0.20c; marine steel, 0.40c; locomotive firebox steel, 0.50c; all sketches excepting straight taper plates varying not more than 4 inches in width at ends, narrowest end not being less than 30 inches, 0.10c; circles, 0.20c. Plates in widths over 100 inches up to 110 inches, 0.05c; over 110 inches up to 115 inches, 0.10c; over 115 inches up to 120 inches, 0.15c; over 120 inches up to 125 inches, 0.25c; over 125 inches up to 130 inches, 0.50c; over 130 inches, 1c. Gages under ¼ inch to and including 3-16 inch plate on thin edge, 0.10c; under 3-16 and including No. 9, 0.25c. Five cents extra for less than carloads. Terms net cash in 30 days.

Sheets.—While the general tone of the sheet market appears to be much firmer, a rather spotty condition exists in some sections. One of the leading independent companies is operating its sheet mills to capacity and is four weeks behind on shipments. Two or three local companies have accepted fairly large contracts for delivery over the first quarter of 1911, although others will not quote for delivery beyond Jan. 1. A few plants which have been operating part time during the past month are still making low quotations. We quote base prices as follows, with $1 a ton added as the delivered price in the Pittsburg district:

Blue annealed sheets, No. 10 gage, 1.60c to 1.65c; box annealed sheets, No. 28 gage, 2.15c to 2.20c; galvanized sheets, No. 28 gage, 3.20c to 3.25c; painted roofing sheets, 1.55c to 1.60c per square for No. 28 gage, 2½-inch corrugation; galvanized roofing sheets, 2.75c to 2.80c per square for No. 28 gage, 2½-inch corrugation.

Tin Plate.—Users of tin plate are covering for their 1911 requirements, several large contracts have been placed in this district during the past week for 1911 delivery. During the past few days new bookings of tin plate for November and December shipment have been fairly heavy and prices are firm. On account of the greater activity in this market, some of the tin mills which were scheduled to go down next week will continue to operate throughout the remainder of the year and some of the mills which have been closed for repairs will be started within the next 10 days. The base price on tin plate is as follows:

Coke tin plate, 10-pound basis, 14 x 20, $3.60, f. o. b. mill, Pittsburg district.

Rails and Track Material.—Additional inquiries for steel rails for 1911 delivery are noted, although no large orders have been placed in this market. It is understood that practically all of the large transportation companies have decided upon their requirements for next year, but in some quarters it is believed that the initial orders of some roads will not include their full requirements and it is intimated that in some instances the railroads will hold up part of their orders until it is definitely decided what is to be done regarding the proposed advance in freight rates. There is practically no buying in standard rails for delivery over the remainder of the year, although bookings of light rails continue fairly heavy. The announcement that prices of rails will be quoted on the 100-pound unit instead of by the gross ton is reported as having met with the approval of the large trunk lines. Some of the railroads are expected to make large awards in the near future for spikes and track bolts. We quote the market as follows, the base price on openhearth rails being 1.34c per pound, mill:

Fifty-pound and heavier, 1.25c per pound; carloads and less than 500 tons, 1.34c per pound; light rails on base weight of 40 to 45 pounds, $26.50 to $27, the schedule on the other weights being irregular and subject to negotiations; angle splice bars for standard sections, 1.50c, Pittsburg; standard spikes, 1.55c to 1.60c, Pittsburg; hand spikes, 1.65c to 1.70c, Pittsburg; track bolts, 2.30c, Pittsburg.

Steel.—Inquiries involving heavy tonnage of billets and sheet bars for delivery over the early part of 1911 are noted and it is expected that some fairly large contracts will be placed within the next 10 days. In a few instances, some plants are understood to have accepted contracts for first quarter at the maximum prices quoted below, although some mills will not accept any business for delivery beyond Jan. 1 at today's prices. There is comparatively little new business being booked for November and December shipment, although specifications are coming in at a fairly satisfactory rate. Prices this week show practically no change, although the market appears to be somewhat firmer in some respects. We quote the market as follows:

Bessemer 4 x 4 billets with 0.25 carbon and less are quoted at $23.50 to $24, Pittsburg, with the usual extras for size and analysis, and open-hearth rolling billets, $24.50 to $25, Pittsburg. Forging billets are quotable at $29 to $30, Pittsburg. Bessemer sheet and tin bars are quoted at $25, and open-hearth sheet bars are quoted at $25, makers' mill, located within the $1, Pittsburg, freight limits.

Hoops and Bands.—Conditions surrounding this market show practically no change. New business is only moderately heavy and there is little forward buying, although specifications continue to come in at a satisfactory rate. Prices are firm. We quote the market as follows:

Hoops in carload lots, 1.50c; in less than carload lots, 1.65c; bands, 1.40c, base, with net extras, as per standard steel.

Merchant Bars.—Some fairly large inquiries for steel bars for delivery over the first three months of next year are noted and a few contracts for 1911 delivery have been placed. Mills promising quick shipment are getting the bulk of the new business developing in this section. Reports from western sections indicate that agricultural implement makers are busy and steel bar makers expect some large awards and heavier specifying from this source in the near future. There is more general buying of bar iron on the part of the transportation companies for the various di-

vision shops and the market is making a fairly good showing as compared with recent months. New business in shafting is exceedingly light and some mills have very little tonnage on their books. We quote the market as follows:

Common iron bars, 1.40c to 1.45c, Pittsburg; Bessemer and open-hearth steel bars, 1.40c; plow and cultivator, 1.40c; channels, angles, zees, tees, under 3-inch, 1.50c, all f. o. b. mill. The following differentials are maintained on steel: Less than 2,000 pounds of a size, 0.35c advance. Cold rolled and ground shafting, 55 per cent in carloads and 50 per cent in less than carloads, delivered in base territory.

Muck Bar.—Trading in this market is rather light. Consumers appear to be fairly well covered and makers have heavy tonnage on their books. The general asking price of the best grades of muck bar is $30, Pittsburg.

Structural.—There is a fair amount of miscellaneous structural business appearing in this market, but no large awards have been made. There is fairly heavy tonnage under actual negotiation and it is expected that some large awards will be made before the end of the month. An encouraging feature of the situation is that a large part of the new inquiry is coming from the railroads. Owing to the fact that the building season is drawing to a close, it is expected that there will be very little new structural work in the immediate Pittsburg district for the next few months. Nothing definite has been learned in this market regarding the awarding for the Quebec bridge. We quote the market as follows:

Beams and channels, 15 inches and under, 1.40c; over 15 inches, 1.50c; zees, 1.40c; tees, 1.45c; angles, from 3 to 6 inches, 1.40c; over 6 inches, 1.50c; universal and sheared plates, 6¼ inches wide and wider, 1.40c.

Merchant Pipe.—Miscellaneous business in pipe continues fairly heavy, although no large awards have been made. A local interest which recently closed for 15 miles of 6-inch steel pipe, has also purchased 18 miles of 6-inch pipe. The inquiry for 35 miles of 6-inch oil line pipe, noted last week, has been withdrawn, as a result of the transaction a few days ago whereby the Louisiana holdings of the J. C. Trees Oil Co., Pittsburg, were purchased by the Standard Oil Co. for approximately $9,000,000. Trading in merchant steel pipe is confined chiefly to small lots and jobbers are not buying very heavily. The market on iron pipe shows little activity. Prices are firm. We quote the following official discounts in carload lots, subject to the usual preferential discount to the large buyers, merchant pipe, where specified, being offered in from ⅛ to 6 inches:

Iron and Steel Basing Prices.

	Steel.		Iron.	
	Butt weld.			
	Black.	Galv.	Black.	Galv.
⅛, ¼, ⅜ inch	72	58	68	54
½ inch	75	63	71	59
¾ to 1½ inch.....	79	69	75	65
2 to 3 inches.....	80	70	76	66
	Lap weld.			
2 inches	76	66	72	62
2½ to 4 inches.....	78	68	74	64
4½ to 6 inches.....	77	67	73	63
7 to 12 inches	75	59	71	55
EXTRA STRONG, PLAIN ENDS.				
	Butt weld.			
⅛, ¼, ⅜ inch.....	69	59	65	55
½ inch	74	68	70	64
¾ to 1½ inch	78	72	74	68
2 to 3 inches.....	79	73	75	69
EXTRA STRONG, PLAIN ENDS.				
	Lap weld.			
2 inches	75	69	71	65
2½ to 4 inches.....	77	71	73	67
4½ to 6 inches.....	76	70	72	66
7 to 8 inches.....	69	59	65	55
9 to 12 inches.....	64	54	60	50
DOUBLE EXTRA STRONG, PLAIN ENDS.				
	Butt weld.			
½ inch	64	58	60	54
¾ to 1½ inch	67	61	63	57
2 to 3 inches.....	69	63	65	59
DOUBLE EXTRA STRONG, PLAIN ENDS.				
	Lap weld.			
2 inches	65	59	61	55
2½ to 4 inches.....	67	61	63	57
4½ to 6 inches.....	66	60	62	56
7 to 8 inches.....	59	49	55	45

Plugged and reamed pipe is furnished at 2 points higher price, either butt or lap weld.

Boiler Tubes. — Specifications for merchant and locomotive boiler tubes show a slight gain for the week, although new business continues rather light. We quote the market as follows:

	Steel.	Iron.
1 to 1½ inch	49	43
1¾ to 2¼ inch	61	43
2½ inch	63	48
2¾ to 5 inch	69	55
6 to 13 inch	60	43

2½ inch and smaller, over 18 feet, 10 per cent net extra.
2¾ inch and larger, over 22 feet, 10 per cent net extra.

To destination east of the Mississippi river will be sold at delivered discount for carloads lowered by two points, for lengths 22 feet and under; longer lengths, f. o. b. Pittsburg.

Wire Products. — Notwithstanding that there is a large amount of new business in wire and nails developing in various sections of the country, and that some mills are two and three weeks behind in deliveries, quotations of $1.50 on plain wire and $1.70 on wire nails are being shaded by some mills. Western jobbing interests continue to buy freely, although stocks are not being increased to any great extent. Demand for cut nails is fairly heavy, and prices appear to be firm at $1.65, Pittsburg, for jobbers' carload lots. The new wire plant of the Jones & Laughlin Steel Co. at Aliquippa, Pa., started making wire Nov. 1. When running full time, the new plant will have a capacity of 300 tons of wire per day. We quote the market as follows:

Wire nails, jobbers' carload lots, $1.65 to $1.70; retailers' carload lots, $1.70 to $1.75; cut nails, jobbers' carload lots, $1.65; painted barb wire, jobbers' carload lots, $1.70; retailers' carload lots, $1.75, with 30c for galvanizing; plain wire to jobbers in carloads, $1.45 to $1.50, and to dealers, in carloads, $1.50 to $1.55; polished staples, $1.70; galvanized staples, $2.

Wire Rods.—As a result of the increased activity in the market on wire products, prices of wire rods are firm. Users are not buying very far ahead and makers are not anxious to accept long term contracts at today's prices. We quote $28.50 to $29, Pittsburg, on Bessemer and open-hearth rods.

Coke.—There has been no important trading in this market during the past week. Several deals are now being negotiated for first half and for all of 1911, which in all probability will be closed within the next week. Many conflicting reports are being circulated regarding recent transactions in Connellsville furnace coke for prompt shipment. Investigation shows that sales have been made at $1.50, ovens, and in some instances this price has been shaded, although sales have also been reported on a basis of $1.55 to $1.60, ovens. In addition to the above, some sales have been made at very low prices, but special conditions were involved. The general asking price of furnace coke for delivery next year is from $1.80 to $1.90, ovens. Reports of lower prices for contract coke are not confirmed and offers of $1.75, ovens, have been rejected. There is little buying of foundry coke, although shipments continue heavy and prices are fairly firm. We quote standard Connellsville furnace coke for prompt shipment at $1.45 to $1.60, ovens, and on contract, from $1.80 to $1.90, ovens. On high grade Connellsville foundry coke, we quote from $2 to $2.10, ovens, for prompt delivery; on contracts from $2.25 to $2.50, ovens. The Connellsville *Courier's* figures for the week ending Oct. 29, show 27,414 active ovens with an output of 347,896 tons, compared with 27,469 active ovens and a production of 351,085 tons the previous week.

Old Material.—Sentiment in this market appears to have improved somewhat, but actual business transactions are light and consumers are still following the policy of buying in small lots for early needs. A large portion of the offerings of the Pennsylvania Railroad Co. and other initial lines has gone direct to consumers at current prices. Dealers are not increasing their stocks, and, with the exception of the sales made by the various railroads, trading is practically at a standstill. Prices show no change from a week ago. We quote, gross tons, delivered in the Pittsburg district, including Monessen, Sharon, Steubenville, Brackenridge and Follansbee, as follows:

Heavy melting scrap	$14.00 to 14.25
Rerolling rails	15.00 to 15.50
Bundled sheet scrap	10.50 to 11.00
Iron axles	24.00 to 24.50
Old iron rails	15.00 to 15.25
No. 1 wrought scrap	14.50 to 15.00
Old car wheels	13.50 to 14.00
Low phosphorus	17.50 to 18.00
Machine shop turnings	9.00 to 9.25
Cast borings	8.25 to 8.75
No. 1 cast scrap	14.00 to 14.25
Malleable	14.00 to 14.50
Stove plate	11.00 to 11.50

Pig Iron More Active—Structural Material Strong.

Office of THE IRON TRADE REVIEW,
1328 Monadnock Block, Nov. 8.

There is somewhat greater activity in pig iron, and confidence is gaining ground gradually. Further improvement in the situation is expected after the elections. While business in rails and plates is still light, it is known that western roads are preparing their 1911 rail and equipment schedules and it is expected that they will be in the market for their actual requirements before long. It is probable, however, that the railroads will buy nothing beyond their absolute needs at the present time and will trust to future conditions for the additional supplies which will be necessary. Regardless of the exact terms of settlement with the locomotive engineers on western railroads, who are demanding an advance in wages of from 12 per cent to 16 per cent, the railroads will have to grant a substantial increase, thus further adding to their already swollen wage accounts. Structural material is strong and the total tonnage of contracts let to fabricators reported in the Chicago market this week amounts to 6,300 tons, of which 5,900 tons was taken by the leading interest.

Pig Iron.—Inquiry is heavy, but what is more important sales of iron are increasing. A considerable tonnage of southern iron was sold during the week, most of it for delivery next year. A conservative estimate of the total amount of iron sold through Chicago selling agencies during the week past places the figure at 20,000 tons, practically all of this going in lots of 500 tons or less to widely scattered consumers. A local malleable iron industry is reported to have closed for 2,000 tons of malleable Bessemer. Some irregularity in the price of southern iron is noticeable, although the variations between quotations are not much more marked than they have been for some time. Certain southern furnaces have announced that they have sold enough iron for delivery over the remainder of the year to warrant advancing their prices and have increased their quotations 25 cents a ton. On the other hand, evidence of sales of southern foundry No. 2 on a basis of $11, Birmingham, for first quarter is fairly conclusive, although the market is still quotable at $11.50, and in view of the present strength it is not probable that it will go lower. Charcoal iron is quiet and stocks in the hands of charcoal furnaces and selling interests are heavy. Inquiries on about 5,000 tons of charcoal iron are still pending.

We quote the market, f. o. b. Chicago, as follows:

(This year's delivery.)

Lake Superior charcoal	$18.00 to 18.50
Northern foundry No. 2	16.00 to 16.50
Southern foundry No. 2	15.35 to 15.85
Southern silveries, 5 per cent silicon	16.85 to 17.35
Jackson Co. silveries 8 per cent.	19.40
Malleable Bessemer	16.00 to 16.50
Aabama basic	15.35 to 15.85

(First quarter delivery.)

Lake Superior charcoal	18.50 to 19.00
Northern foundry No. 2	16.25 to 16.75
Southern foundry No. 2	15.85 to 16.35
Southern silveries, 5 per cent silicon	17.35 to 17.85
Jackson Co. silveries, 8 per cent.	....
Malleable Bessemer	16.25 to 16.75
Alabama basic	15.85 to 16.35

Billets.—The local billet market continues featureless, with occasional sales in lots of 100 tons or less. We quote, nominally open-hearth forging billets, f. o. b. Chicago, $28 to $29.

Merchant Bars.—Some railroads are buying bar iron in small lots, but in general the situation has not changed particularly since last week. Prices of bar iron are soft and it is probable that 1.35c, Chicago, can be shaded on attractive business. October shipments of steel bars were fairly satisfactory. While in general consumers have been clamoring for lower prices, this policy is in some cases acting as a boomerang with an uncomfortable effect on the consumers' own activities. The result is that a number of larger consumers in this territory are changing their attitude toward prices of iron and steel products and are not anxious to see further declines. The business in reinforcing steel bars during the season just past has been remarkably good.

We quote for Chicago delivery, as follows:

Bar iron, 1.35c to 1.40c; hard steel bars, re-rolled, 1.45c to 1.55c; soft steel bars and bands and small shapes, 1.58c to 1.63c, base; hoops, 1.73c to 1.83c; planished or smooth finished tire steel, 1.78c to 1.83c, base; iron finished tire steel, 1.73c, base; smooth finished machinery steel, 1 inch and larger, 2.43c; spring steel, 2.28c; crucible spring steel, 2.78c; tool steel, 7c to 9c, with higher prices for special grades. Quotations on shafting are 55 per cent off the list for carload lots, and 50 per cent off for less than carload lots, carload freight allowed to points in base territory.

On iron and steel from local stock, we quote as follows.

Bar iron, 1.80c to 1.90c, per pound base; soft steel bars, 1.80c to 1.90c per pound base; soft steel hoops, 2.10c to 2.20c, full extras.

Structural Material.—Judging from the amount of business actually closed, and that which is still pending, local conditions in the structural field are very encouraging. The total tonnage of contracts let to fabricators reported in this market last week amounts to 6,300 tons, of which 5,900 tons was taken by the leading interest. The American Bridge Co. will fabricate 3,000 tons of steel barges ordered by the government for the Mississippi River Improvement Commission. The barges will be used for the transportation of material in river improvement work. The American Bridge Co. has also taken 1,800 tons of bridges from the Oregon Trunk railway; 100 tons for the Peery hotel, Salt Lake City; 100 tons for a new shop for the Imperial Iron Works, Duluth, Minn., and 900 tons for a new building for the American Beet Sugar Co., at Huntington Beach, Cal. The Chandler apartment building, Chicago, 250 tons, will be fabricated by the Morava Construction Co. An Atlantic coast ship building corporation has taken an order for a steel dredge hull, 150 tons, from the American Dredging Co., Fort Wayne, Ind. It is interesting to note, in view of the talk of dull business, that a leading fabricator was unable to take this work because of inability to make sufficiently quick delivery. Small structural orders continue very heavy and fabricators are generally well supplied with business.

We quote, mill prices for structural shapes, Chicago delivery, as follows:

Beams and channels, 15 inches and under, 1.58c to 1.63c. For extras, see Pittsburg report.

We quote, local store prices, as follows, f. o. b. Chicago:

All angles, 3 inches and larger, including 6 inches, $1.80 to $1.90 per 100 pounds; angles over 6 inches, $1.90 to $2 per 100 pounds, base; beams, 3 to 15 inches, inclusive, $1.80 per 100 pounds, base; channels, 3 inches and larger, $1.80 per 100 pounds, base.

Rails and Track Supplies.—Railroads continue to feel their way in the market, but western roads are not coming to the front very rapidly with orders at this time. New orders for standard rails continue very light. Business is also quiet in light sections. It is known, however, that a number of western and southwestern roads are making up their schedules for the coming year and will be in the market before long for their actual requirements. The rail makers are

inclined to discourage orders which amount to but little more than options to purchase, while the railroads on the other hand are anxious to have a cancellation clause inserted in their contracts.

See Pittsburg report for prices on standard sections. On light rails and track supplies for Chicago delivery, we quote as follows:

Light rails, 35, 40 and 45-pound, $26; 16, 20, 25 and 30-pound, $27; 12-pound, $28.

Light section relayers, 45 pounds and under, subject to inspection, $21 to $23; standard section re-laying rails, subject to inspection, $23.50 to $24.

Track supplies, f. o. b. Joliet, angle bars, 1.50c to 1.60c; railroad spikes, 1.70c to 1.75c; smaller size spikes, 1.75c, base; track bolts with square nuts, 2.25c to 2.30c, base.

Plates.—Practically no new business in plates has developed during the week. The car business which was reported in this correspondence a week ago is still hanging fire and some of it is likely to be held up for a number of weeks. Purchases of cars and other materials which will require large amounts of money are in some cases being held up until the elections are over and the political situation cleared up. The local plate mills are operating at about one-half their capacity.

We quote, Chicago delivery, as follows:

Tank plates, ¼ inch thick, 6¼ to 100 inches wide, 1.53c to 1.63c. For extras, see Pittsburg report.

Store prices, f. o. b. Chicago, are as follows:

Tank steel, ¼ inch and heavier, up to 72 inches wide, 1.80c to 1.90c; from 72 inches to 96 inches wide, 1.90c to 2c; 3-16 inch up to and including 60 inches wide, 1.90c to 2c; 72 inches, 2.15c to 2.25c; No. 8, up to 60 inches wide, 1.95c to 2.05c. Flange quality and heads, 25c extra.

Sheets.—The trade in the west is accepting the new sheet card without protest and prices are being well maintained. Quotations this week are possibly a little firmer. October was a very good month for the sheet makers, but there is a probability of some slackening up during the winter.

We quote, store prices at Chicago, as follows:

Blue annealed No. 10, 2.10c to 2.20c; No. 12, 2.20c to 2.30c. Box annealed, No. 28, 2.75c to 2.85c. Galvanized, No. 28, 3.65c to 3.75c.

For mill prices, see Pittsburg report. Freight to Chicago, 18 cents.

Wire Products.—The mild, clear weather has had its effect in maintaining the demand for fencing and agricultural wire. Local wire mills are operating practically at capacity with every prospect of continued good business. Merchants are beginning to lay their plans for ordering further stocks subsequent to the annual inventory next month.

We quote, f. o. b. Chicago, as follows:

Wire nails, jobbers' carload lots, $1.88; retailers' carload lots, $1.93; retailers' less than carload lots, $2.03; painted barb wire, jobbers' carload lots, $1.88; retailers' carload lots, $1.93; retailers' less than carload lots, $2.03; with 30c for galvanizing; plain wire to jobbers, $1.68; plain wire, retailers' carload lots, $1.73; staples, bright, $1.88.

Merchant Pipe and Tubes.—Business shows but little change. The demand for heavy high pressure piping is possibly a little brighter. Store business is good and the considerable amount of building activity going on in this territory is creating a large demand for all sizes of merchant pipe. Boiler shops are running light, resulting in a quiet trade in tubes.

We quote, iron and steel pipe and tubes, out of store, f. o. b. Chicago, as follows:

Iron and Steel Pipe Basing Prices.

	Steel.		Iron.	
	Black.	Galv.	Black.	Galv.
⅛-⅜ inch	68.2	53.2	62.2	47.2
½ inch	71.2	58.2	65.2	52.2
⅝ inch	76.2	65.2	71.2	60.2
4½-6 inches	73.2	62.2	69.2	58.2
7-12 inches	70.2	53.2	66.2	49.2
EXTRA STRONG PLAIN ENDS.				
¼ inch	69.2	62.2	....	....
⅜ inch	74.2	67.2	....	....
⅞ inch	64.2	....	....	....
DOUBLE EXTRA STRONG.				
½ inch	57.2	49.2	....	....
⅝ inch	62.2	54.2	....	....
⅞ inch	52.2	40.2	....	....

Tubes.

	Lap weld steel. Per cent.	Charcoal iron. Per cent.	Shelby seamless. Per cent.
1 inch	..	..	57½
1¼ to 2¼ inch	50	35	35
2¾ to 5 inch	60	48	46

Cast Iron Pipe.—Winter business from municipalities is coming in slowly and the local pipe market remains almost featureless. If the financial situation clears a little so that bonds will be in better demand, undoubtedly a large number of municipal projects will be taken up for immediate action.

We quote, f. o. b. Chicago, as follows:

Four-inch water pipe, $27; 6 to 12 inches, $26; larger sizes, $25; gas pipe, $1 a ton higher.

Old Material.—With heavy stocks on hand the market remains depressed. Old rails are weak and declines are noted in iron and steel car axles, which are now quotable at $19 to $19.50, Chicago. Sentiment in the scrap market, however, is buoyant. Sellers are invariably making the advances, which places the advantage on the side of the consumers.

We quote the market, f. o. b. Chicago, as follows:

GROSS TONS.

Old car wheels	$12.00 to 13.00
Old iron rails	15.75 to 16.25
Rerolling rails (5 ft. and over)	15 00 to 15.50
Old steel rails (3 ft. and under)	13.00 to 13.50
Frogs, switches and guards	12.00 to 12.50
Heavy melting steel	12.00 to 12.50
Shoveling steel	11.50 to 12.00

NET TONS.

No. 1 R. R. wrought	$11.75 to 12.25
No. 2 R. R. wrought	10.50 to 11.00
Arch bars and transoms	14.50 to 15.00
Knuckles, couplers and springs	11.25 to 11.75
Shafting	16.50 to 17.00
Iron car axles	19.00 to 19.50
Steel car axles	19.00 to 19.50
Locomotive tires	16.00 to 16.50
Dealers' forge	10.50 to 11.00
Pipes and flues	9.00 to 9.50
No. 1 cast, 150 lbs. and less	12.00 to 12.50
No. 1 busheling	9.75 to 10.25
No. 2 busheling	8.00 to 8.25
No. 1 boiler cut	8.75 to 9.25
Boiler punchings	14.25 to 14.75
Cast and mixed borings	5.00 to 5.50
Machine shop turnings	7.00 to 7.50
Railroad malleable	11.00 to 11.50
Agricultural malleable	10.25 to 10.75
Stove plate and light cast scrap	11.00 to 11.50
Angle bars, splices, etc., iron	13.25 to 13.75
Angle bars, steel	11.50 to 12.00

CLEVELAND

Good Sales of Pig Iron for Shipment to Distant Points.

Office of THE IRON TRADE REVIEW,
Penton Building, Nov. 8.

Iron Ore.—Iron ore shipments up to Nov. 1 were 39,978,308 tons, a gain of 3,712,974 over last year for the same period. It is estimated that November shipments will amount to very little more than 2,000,000, and that the total for the season will be about 42,000,000 tons. All the barges of the Pittsburg Steamship Co. have been dropped, and many of the steamers of that company's fleet are on their last trip. Furnaces are showing considerable reluctance about taking ore, and mining forces are being rapidly decreased on the ranges. The outlook is for a very quiet winter in the Lake Superior regions.

On base ores with the guarantee of 55 per cent on old range and Mesabi Bessemer, and 51½ per cent on old range and Mesabi non-Bessemer, we quote as follows: Old range Bessemer, $5; Mesabi Bessemer, $4.75; old range non-Bessemer, $4.20; Mesabi non-Bessemer, $4.

Pig Iron.—The shipments of one important interest were heavier in October than in any month this year. In the immediate Cleveland district, the market is very quiet, but some good-sized sales have been made through Cleveland agencies for delivery to distant points. There are a few good inquiries for delivery in other cities, including a considerable tonnage of malleable and other grades. The basic market is considerably firmer, and higher prices are probable. The usual asking price for No. 2 foun-

dry in the valley is $14 for first quarter, and some interests are asking $14.25 for second quarter, but others are content to sell for $14 through the entire first half. We quote, delivered in Cleveland, as follows:

No. 1 foundry	$14.75
No. 2 foundry	14.25
No. 2 Southern	15.35
Gray forge	14.00
Bessemer	15.90
Lake Superior charcoal	18.00
Jackson Co. 8 per cent silvery	19.00

Coke.—The coke market shows very little activity, and prices somewhat weaker.

Connellsville furnace coke $1.45 to $1.55 for prompt delivery, and $1.70 to $1.75 on contracts for this year and $1.80 to $1.90 for first half next year. Connellsville foundry coke, $2 to $2.10 for prompt, and $2.25 on contract for this year, and $2.25 to $2.50 for first half of next year.

Finished Material.—The market is very quiet, and in some cases there is a slight tendency toward weakness. This is noticeable in the case of blue annealed sheets. For the most part, however, prices are very firm, and this is particularly true of bars. It is understood that a southern Ohio interest is still quoting 1.35c, Pittsburg, on plates, but all of the more important interests are adhering firmly to 1.40c. A Chicago interest which recently sold a large tonnage of steel bars at 1.35c, Pittsburg, is now understood to be asking 1.40c. The Y. M. C. A. building, on which it has been decided standard sections shall be used, has not yet reached the contract stage. No other important structural contracts are to be awarded in the near future. Automobile manufacturers are specifying a little more freely on shafting contracts.

Old Material.—Dealers are still holding to their stocks and brokers declare they find little encouragement in the present for the immediate future. While some small quantities of various grades are moving, yet the buying continues to be from hand to mouth. We quote, f. o. b., Cleveland, as follows:

Old iron rails	$16.00 to 16.50
Old steel rails (under 6 ft.)	14.00 to 14.50
Old car wheels	12.50 to 13.00
Old steel boiler plate	11.00 to 11.50
Malleable iron (railroad)	13.25 to 13.75
Steel axles	19.50 to 20.00
Malleable iron (agricultural)	12.00 to 12.50
Heavy steel	13.00 to 13.25
Country mixed steel	12.25 to 12.75

We quote, in gross tons, as follows:

No. 1 R. R. wrought	$12.50 to 13.00
No. 1 busheling	12.00 to 12.50
No. 1 machine cast	12.00 to 12.50
Axle turnings	9 00 to 9.50
Machine shop turnings	6.00 to 6.50
Grate bars	10.50 to 11.00
Pipes and flues	11.00 to 11.50
Tank iron	9.00 to 9.50
Sheet iron	5.00 to 5.50
Wrought drilling	6.50 to 7.00
Stove plate	11.00 to 11.25
Cast borings	6.00 to 6.50

CINCINNATI

Contracting for Coke—Basic Inquiry Still Pending.

Office of THE IRON TRADE REVIEW.
Room 11, Blymyer Bldg., Nov. 8.

Inquiry has strengthened considerably during the past week, but is confined almost exclusively to next year's requirements. Aside from this, the situation presents no new phases and the general aspect of the market is unchanged. Some of the southern producers continue to ask an advance of 50 cents for next year's contracts, while there are others who are willing to allow spot prices apply through the first quarter at least. Northern furnaces have apparently made no changes in their schedule, and as a general proposition are willing to sell both for prompt and forward delivery at $14, Ironton. As a matter of fact, some of the furnaces are quoting on a higher basis, but it is also true that they are getting very little business at their figures. It is said that the pipe interests have been buying some large blocks of iron during the week, but as to the approximate tonnage no figures have been given for publication. The local inquiry for approximately 6,000 tons of basic that has been pending for a week, is still in abeyance, but will be closed within the next few days. The inquiry from a Kentucky melter for 1,000 tons of analysis iron, reported last week, will be closed, it is said, at about established quotations. A concern in the northern part of the state is in the market for 500 tons of southern foundry grades for first six months' delivery. A central Ohio melter wants 500 tons of northern grades, same delivery. One Indiana melter is asking for 1,000 tons of malleable and another in same territory wants 2,000 tons of same grade for next year's delivery. A northern Ohio melter is inquiring for 1,500 tons of gray forge, same to be delivered during the first six months of next year. There is an inquiry from Chicago territory for 200 tons, and another for 500 tons of charcoal iron for next year. In addition to these special inquiries, there are a number of well scattered and satisfactory requests for quotations that will doubtless result in sales before the week closes. An Indiana melter bought 1,000 tons of northern iron. A concern in Illinois took over 1,000 tons of southern grades. A southern Ohio melter bought 300 tons of northern grades, all for first half delivery. Sales of small lots have been active and have aggregated a fair tonnage. We quote prices based on freight rate of $3.25 from Birmingham and $1.20 from Ironton, as follows:

	1910.	First quarter, 1911.
Southern foundry No. 1	$14.75	to 15.25
Southern foundry No. 2	14.25	to 14.75
Southern foundry No. 3	13.75	to 14.25
Southern foundry No. 4	13.75	to 14.25
Southern No. 1 soft	14.75	to 15.25
Southern No. 2 soft	14.25	to 14.75
Southern gray forge	13.75	to 14.25
Northern No. 1 foundry	15.70	to 15.95
Northern No. 2 foundry	15.20	to 15.45
Northern No. 3 foundry	14.70	to 14.95
Jackson county 6 per cent silicon		18.20
Jackson county 8 per cent silicon	19.20	to 19.70
Jackson county 10 per cent silicon		20.20

Coke.—Last week's report stated that several large contracts were pending for furnace supply. These have since been closed, and negotiations are now pending for several other large blocks. Foundry trade is quiet and featureless. The Whitney-Kemmerer Co., through its Cincinnati office, has closed with a prominent southern furnace for approximately 4,000 tons per month of Wise county coke for one year from Jan. 1 on a sliding scale basis. We quote from the leading coke producing districts as follows:

	Prompt Shipment.	During year.
Connellsville district:		
Foundry coke	$2.00 to 2.25	$2.25 to 2.50
Furnace coke	1.55 to 1.65	1.75 to 1.85
Wise county district:		
Foundry coke	2.00 to 2.25	2.15 to 2.25
Furnace coke	1.65 to 1.75	*Sliding [scale basis.
Pocahontas district:		
Foundry coke	2.10 to 2.25	2.25 to 2.50
Furnace coke	1.65 to 1.75	1.75 to 1.85
New river:		
Foundry coke	2.50 to 3.25	2.60 to 3.25
Furnace coke	2.20 to 2.30	2.20 to 2.30

*Sliding scale basis means $1.60 for coke based on $9, Birmingham, for pig iron, with an advance of 16 2-3 per cent of the amount over $9 at which pig iron is quoted. This is the usual basis. Other forms of sliding contracts are also made.

Finished Material.—Plates, shapes and bars are quotable at 1.40c, Pittsburg. Taken as a whole, the year's transactions to date have been very satisfactory, although just at present demand is a little quiet and sales below normal. Local demand for structural is unusually light and nothing of importance is pending.

Old Material.—The mills are taking contract business, but appear more or less indifferent. Dealers are receiving a moderate tonnage, but there is no special demand for anything on the list. Prices are about holding their own, but are weak and subject to circumstances. We quote dealers' prices as follows:

Old No. 1 R. R. wrought, net tons	$10.50 to 11.00
No. 1 machinery, net	10.00 to 10.50
No. 1 busheling, net	10.00 to 10.50
Old iron rails, gross	16.00 to 16.50
Old steel rerolling, gross	15.50 to 16.00
Old short lengths, gross	14.50 to 15.00
Old iron axles, net	18.00 to 18.50

Heavy melting scrap, gross	11.00 to 11.50
Stove plate, net	8.00 to 8.50
Heavy turnings, net	6.00 to 6.50
Cast borings, net	4.50 to 5.00
Car wheels	13.00 to 13.50
Grate bars	8.50 to 9.00

NEW YORK

Usual Election Expectancy Noted—Low Cast Pipe Prices.

Office of THE IRON TRADE REVIEW, 1115 West Street Bldg., Nov. 8.

Iron Ore.—The collapse of the Black Sea grain movement, which has been occasioned by better crops in European countries than had been anticipated, has caused a free offering of boats for the Mediterranean ore traffic. As a result, charter rates have fallen sharply and boats have been tendered the past week at 9s to Philadelphia. The present situation fitly illustrates the sharp fluctuation of the freight market, as only a few weeks ago chartering was done from Mediterranean ports to Philadelphia at 10s 6d. Five boats with cargoes of Swedish ore are now en route to this country. This ore, by reason of its rich iron content and favorable price, is moving better than some of the other foreign grades, but a large tonnage of this ore is yet to be delivered this season.

Pig Iron.—The usual ante-election hesitancy in starting new negotiations is apparent in the pig iron market in this territory and inquiry during the past week has shown less general activity. Selling has continued in a fair way, as propositions previously pending are being closed. Much of this is in small lot business and this apparently has become a more pronounced characteristic of the situation, indicating that while buyers are appreciating their opportunities to contract at low prices, they are still doing this quite cautiously. One New Jersey consumer is out with a new inquiry for 1,500 to 2,000 tons for prompt shipment and another is still taking figures on 2500 to 3,000 tons for first quarter. The leading pump interest has closed for about 1,500 tons for eastern plants and a Rochester stove maker has taken 1,000 tons for first quarter. In New England territory, the selling has not been as active as the preceding week, but one machine tool builder this week took about 1,200 tons. The New England price range continues about $16 to $16.25, delivered, for No. 2X foundry. Quotations on standard brands in eastern Pennsylvania remain about $15 to $15.25 for No. 2X at the furnace, or $16 to $16.25, tidewater. Consumers of malleable in eastern Pennsylvania and New Jersey have made some purchases, including one lot of 1,000 tons for first quarter, and the market on this grade rules about $16.25 to $16.50, delivered, in these districts. Negotiations referred to last week for a large aggregate tonnage of basic, about 30 000 tons, are still in progress, as buyers and sellers show considerable variance in their ideas of value in this grade. Makers of basic metal in the east appear less inclined to apply present prices to first quarter shipment and are acting with deliberation upon the business before them. The range of $14.50 to $15, delivered, nominally represents the basic market, based on most recent sales, but the furnaces are more strictly holding any such minimum quotation to iron they may be obliged to move immediately. We quote, for prompt and first quarter shipment at tidewater, as follows:

Northern foundry No. 1	$15.75 to 16.25
No. 2X foundry	15.25 to 15.75
No. 2 plain	15.00 to 15.25
No. 2 Virginia	15.80 to 16.30
No. 2 southern foundry	15.25 to 15.75
Malleable	15 50 to 16.00
Gray forge	14.75 to 15.00

Ferro-Alloys.—It develops that on recent sales of ferro-manganese for delivery throughout the entire year of 1911, the $39, seaboard, price has been shaded. Such sales have been made between $38.75 and $39, seaboard. An eastern consumer has just closed on 1,200 tons for such delivery upon about this basis. Another eastern buyer is negotiating for about 500 tons and considerable scattered inquiry is pending. Recent developments in 50 per cent ferro-silicon tend to show that the prices applying to prompt shipment are stronger than those on forward contract. We quote 80 per cent ferro-manganese for prompt and forward shipment at from $38.75 to $39, seaboard, and 50 per cent ferro-silicon at from $53 to $54, seaboard.

Cast Iron Pipe.—The Standard Cast Iron Pipe & Foundry Co. is low bidder and will receive award for about 4,000 tons for metropolitan boroughs under bids taken in the week. The Standard company's price on the first lot of 1,530 tons of pipe was $21.56, delivered, and on specials $35.65; on the second lot of 1,960 the pipe price was $21.90, and for the specials $38.80; on the third small section the prices were $22 for the pipe and $46.60 for the specials. These prices mean from $20 to $20.50 at the foundry. James McAvoy, of New York, is the low bidder on 1,400 tons on a contractor's letting. The leading maker has taken 1,500 tons for Havana, Cuba, and the pipe requirements for the present work in that city to be placed within the next year are about 6,000 tons. Recent export orders amounted to about 4,000 tons. R. D. Wood & Co. have booked 1,300 tons for Pawtucket, R. I. The Standard Cast Iron Pipe & Foundry Co. has taken 900 tons for Providence, R. I. We quote 6-inch pipe at from $21.50 to $22, f. o. b. New York, in carload lots.

Finished Material.—Structural tonnage under negotiation continues to show a gradual diminution, as the awards are not being made up by new inquiry. At the present time, the outstanding tonnage does not exceed 60,000. The 50,000-ton mark is looked upon as the danger line by large steel interests. In the direction of the railroads, there continues to be offered promises of increased buying, but actual improvement is still slow generally. There will be general disappointment if the buying volume of the market from the railroad and other sources does not show some expansion after the election.

At the moment, there is more activity by the railroads in the structural market. The American Bridge Co. has taken 1,700 tons for the Oregon Trunk Line and an independent shop has 350 tons for a transfer bridge for the New York Central at Sixty-ninth street, this city. Inquiries are out for 2,000 tons for viaducts for the Virginian railroad and for 2,000 tons for grade crossing construction in Chicago for the Baltimore & Ohio railroad. Bids have gone in for 250 tons for the St. Paul. The McClintic-Marshall Construction Co. has taken 750 tons for the Fowler estate building in Detroit, and the Morava Construction Co. 225 tons for the Chandler apartment in Chicago. Milliken Bros., Inc., have 300 tons for an apartment at 110th street and Seventh avenue, New York City. Bids went in this week on 4,000 tons for the addition to the Raleigh hotel, Washington, D. C. A highway bridge at Seattle, requiring 700 tons, will shortly appear. There is no decision on the steel for the proposed Taft hotel, at New Haven, Conn.

Plans for the new Woolworth skyscraper to be erected at Broadway and Park place, New York City, call for a structure of 27 stories, which will require about 14,000 tons of steel. The bids upon this enterprise are not expected to be out for a number of weeks.

We quote, New York delivery, as follows:

Angles, 3 to 6 inches x ¼ inch and heavier, 1.56c to 1.61c; beams, 3 to 15 inches, 1.56c to 1.61c; tees, 3 x ¼ inch and heavier, 1.56c to 1.61c; plates, carload, tank, 1.56c to 1.61c; boiler steel, 1.66c to 1.71c; marine boiler, 1.96c to 2.01c; bar iron, 1.40c to 1.45c; soft steel bars, 1.56c to 1.61c.

Old Material.—Practically only two leading consumers are showing much interest in the heavy steel market at the present time and the low level of prices is evidently stimulating this attention, as requests for deliveries after the first of the year have accompanied purchases made. These instances rather reflect the fact that buyers are well covered on their needs, but are closing on occasional lots to cheapen average purchase prices. Several 1,000-ton sales of steel have been made, but these are somewhat exceptional. The whole market continues to be charactrized by small purchases. Prices are soft and in some grades a little lower, namely in iron track scrap. Iron scrap generally is weak. We quote gross tons, prices New York dealers will pay at tidewater, with the exception of cast scrap, which has a local demand, as follows:

Old car wheels	12.00 to 12.50
Old iron axles	21.50 to 22.00
Old steel shafting	16.50 to 17.00
Heavy melting steel	11.25 to 11.50
No. 1 R. R. wrought	13.50 to 14.00
Iron track scrap	12.50 to 13.00
Wrought pipe	10.00 to 10.50
Cast borings	6.75 to 7.00
Wrought turnings	6.50 to 7.00
Heavy cast scrap	12.50 to 13.00
Railroad malleable	12.50 to 13.00
Stove plate	9.00 to 9.50
Grate bars	9.00 to 9.50

PHILADELPHIA

Basic Continues Under Negotiation—Plates Sell Lower in Far West.

Nov. 5.

Pig Iron.—The continued negotiations for a round tonnage of basic iron, estimated at about 30,000 tons, constitute the leading feature of the pig iron market in this territory. A part of this tonnage, representing the requirements of one eastern steel company, has been before the trade for several weeks, but recently another large buyer of the eastern Pennsylvania district has signified its desire to contract for a block of this grade for delivery over the first half. These consumers and the furnaces have not been able to get together on prices; the former have been endeavoring to close at $14.50, delivered, the level of the last important sale made in the east for this year's delivery, but the makers having worked off considerable of the iron they were obliged to move, apparently feel themselves in a stronger position as to first quarter metal and they are asking advances for this period. Some of them have quoted $15.25, delivered, for first quarter on this business. Virginia furnaces have been bidding upon 5,000 tons of basic for shipment over the first half to St. Louis. While the pig iron tonnage being inquired for and sold in this market is larger than several weeks ago, this volume is made up principally in small lot business in 500-ton and less sales. In some directions, there appears to be a greater need of prompt iron, which is looked upon favorably as indicating the expiration of some contracts made by many buyers early in the present year. One consumer is out with an inquiry for 1,500 to 2,000 tons of foundry iron for early shipment. A railroad interest is inquiring for 1,650 tons of Nos. 1 and 2X for first half. The price range on standard grades of foundry iron continues from $15 to $15.25, furnace, for No. 2X for delivery up to the second quarter. Cast iron pipe makers in the west bought about 1,000 tons at the usual figures of $14.20 to $14.70, delivered, for the lower grades. An eastern consumer of malleable is understood to have closed for 1,000 tons of this grade for first quarter at about $16.25, delivered, the iron to be furnished from Buffalo. Some small sales of low phosphorus iron at $22.50, Philadelphia territory, were made in the week. In Virginia, another furnace has gone out, the Dora stack of the Virginia Iron, Coal & Coke Co.

We quote for prompt and first quarter shipment in Philadelphia and vicinity as follows:

No. 1X foundry	$16.25 to 16.50
No. 2X foundry	15.75 to 16.00
No. 2 plain	15.25 to 15.75
Standard gray forge	14.50 to 14.75
Basic	14.50 to 15.00
No. 2X Virginia	15.80 to 16.30
No. 2 Southern	15.00 to 15.50
Low phosphorus	22.50

Finished Material.—The recent unconfirmed report of plates having been sold by eastern mills at concessions from 1.40c, Pittsburg, for western shipment, directs attention to the fact that for Pacific coast delivery, prices on some finished lines, including plates, are from $1 to $2 a ton under that applying to other districts. This variance of prices is due to foreign competition, which the American mills are obliged to meet on the western coast. The plates involved in this particular order, about 1,500 tons, are for Los Angeles delivery, but it is stated this week by the prospective buyer that the business is still pending. On the regular run of business to other than far western territory, eastern plate makers declare that the 1.40c, Pittsburg, price is being upheld.

There continues little net change in the finished tonnage. Some mills have noted an improvement in the volume of orders entered, but this is offset by reverse statements in other directions. Sentiment, however, is manifestly stronger. The railroad situation displays additional signs of a little more liberal attitude in ordering upon the part of these buyers, and it is reported this week that the Norfolk & Western rail order, which has been pending, has been placed with the mills. Bids are going in this week upon 1,200 tons for the Savannah Banking & Trust Co. building, Savannah, Ga. There is no decision upon the addition to the Union League Club, this city, 1,200 tons, upon which bids were entered for the second time last week. Three merchant vessels requiring over 5,000 tons of plates and shapes which are now being figured, are attracting the attention of the mills. The Baltimore & Ohio railroad has up an addition to its passenger station at Wilmington, Del.

For delivery in Philadelphia and vicinity we quote as follows.

Structural shapes, 1.55c to 1.60c; steel bars, 1.55c to 1.60c; iron bars, 1.40c to 1.50c; 4 x 4-inch open-hearth rolling billets, $26, eastern mill; forging billets, $28, eastern mill.

Old Material.—Heavy offerings of scrap are being made by the railroads in their lists for October. The Pennsylvania railroad has out an unusually large shop list which includes 5,000 tons at Altoona, of which 1,300 tons are steel axles. The long rails amount to about 10,000 tons. Some of the monthly offerings of other eastern roads are correspondingly large. The market displays a very moderate activity and buyers are expressing their needs in small tonnages. Sales of heavy melting steel are small and the very low prices offered reflect the covered position of large eastern buyers at the present time. Cast material continues to move in a slightly better way. Wrought consumers are quite indifferent to the market. Prices are about stationary, though in some grades they are merely nominal. We quote gross tons delivered in eastern Pennsylvania consuming territory as follows:

Old steel rails (rerolling)	$15.75 to 16.25
Heavy melting steel	13.50 to 14.00
Old car wheels	13.75 to 14.25
Old iron car axles	25.00 to 26.00
Old steel car axles	20.00 to 21.00
No. 1 railroad wrought	16.00 to 16.50
Wrought pipe	13.00 to 13.25
Cast borings	8.75 to 9.25
Wrought turnings	8.50 to 9.00
Heavy cast scrap	14.00 to 14.50
Railroad malleable	13.50 to 14.00
Stove plate	10.50 to 11.00

ST. LOUIS

More Sales of Pig Iron and Some Feelers are Still Out.

Nov. 7.

Pig Iron.—Upwards of 5,000 tons of pig iron, mostly southern No. 2, have been sold in the St. Louis territory since last Wednesday, and there are still "feelers" in the market for a total of probably 18,000 tons. Most of the sales were in small lots for quick delivery, although one sales agent reports having disposed of 2,500 tons within the last few days, another of 1,200 of southern No. 2 to a local stove melter, and still another of 500 tons. There is a bona fide inquiry out for 1,200 tons of No. 2 soft, 400 tons for shipment over the remainder of the year and 800 over the first quarter of 1911, which it is believed will be closed up within the next 24 hours. Another buyer is asking for prices on high silicon iron, without stating the analysis, but for delivery over the first quarter of next year.

Southern No. 2 is still quoted at $11 to $11.50, Birmingham basis, but there is a feeling among sales agents that the market is manifesting a little more strength. Our prices, delivered, to which the Birmingham freight of $3.75 has been added, follow:

Southern No. 1	$15.50 to 16.00
Southern No. 2	15.00 to 15.50
Southern No. 3	14.50 to 15.00
Southern No. 4	14.00 to 14.50

Ohio iron is offered at $14 to $14.50, furnace, with only small sales reported and few inquiries in the market.

Coke.—The market is extremely quiet for coke, few inquiries having made their appearance, with continued trouble about car shortage reported. We quote:

Best-selected 72-hour Connellsville foundry grades, $2.35 to $2.50 for whole of 1911; 72-hour foundry, $2 to $2.25, on tracks and for immediate delivery; 48-hour Connellsville furnace, $1.60 to $1.85; best 72-hour Virginia foundry, $2 to $2.35; 48-hour Virginia furnace, $1.60 to $1.85. The freight to East St. Louis and St. Louis is $2.80, and $2.70 from the Virginia fields when shipment is destined beyond St. Louis.

Finished Material.—We quote:

Tank plates, ¼ inch and heavier up to 72 inches wide, $1.90 to $2; from 72 inches to 96 inches, $2 to $2.10; sheets, No. 10, blue annealed, $2.30 to $2.40; bar iron, $1.75 to $1.85; soft steel bars, $1.90 to $2.

Old Material.—The market for scrap iron remains dull, with few transactions recorded and a poor outlook for business. Our quotations remain nominally as follows:

Old car wheels	$13.50 to 14.00
Old iron rails	14.50 to 15.00
Rerolling rails (4 ft. and over)	14.25 to 14.50
Old steel rails (2 ft. and under)	13.00 to 13.50
Light section relayers, 45 lbs. and under, subject to inspection	21.00 to 23.00
Relaying rails, subject to inspection	24.50 to 25.00
Frogs, switches and guards	12.50 to 13.00
Heavy melting steel	12.00 to 12.50
Shoveling steel	12.00 to 12.50

We quote, net tons, as follows:

No. 1 R. R. wrought	$11.75 to 12.25
No. 2 R. R. wrought	10.75 to 11.25
Arch bars and transoms	14.50 to 15.00
Knuckles, couplers and springs	12.00 to 12.50
Shafting	15.00 to 15.50
Iron car axles	19.00 to 20.00
Steel car axles	19.00 to 20.00
Locomotive tires	16.00 to 16.50
No. 1 country wrought	10.00 to 10.50
Pipes and flues	9.25 to 9.75
No. 1 cast, 510 lbs. and less	12.50 to 13.00
No. 1 busheling	10.75 to 11.25
No. 2 busheling	7.00 to 7.50
No. 1 boiler cut	9.25 to 9.75
Boiler punchings	11.00 to 11.50
Cast and mixed borings	5.00 to 5.50
Machine shop turnings	7.25 to 7.75
Railroad malleable	10.00 to 10.50
Agricultural malleable	9.00 to 9.50
Stove plate and light cast scrap	9.50 to 10.00
Angle splice bars, iron	13.50 to 14.00
Angle splice bars, steel	12.50 to 13.00

BUFFALO

Fair Amount of Business in Small Orders for Pig Iron.

Office of THE IRON TRADE REVIEW,
932 Ellicott Square, Nov. 8.

Pig Iron.—The market has been a little more quiet than for the past two weeks, and the lull has been laid mostly to the nearness of elections. No large sales are reported, but there has been a fairly good run of medium sized orders ranging from a car load to 500 tons. Some of the foundries which had inquiries out have announced that they have decided not to buy at the present time, but the furnaces believe they will soon be in the market, as present prices are decidedly favorable to the buyer. Inquiries are coming in at a fairly good rate and for good sized amounts. There is still a large volume of iron under negotiation in this territory. Prices remain unchanged. We quote, f. o. b. furnace, as follows:

No. 1X foundry	$15.00 to 15.50
No. 2X foundry	14.50 to 15.00
No. 2 plain	14.25 to 14.75
No. 3 foundry	14.00 to 14.50
Gray forge	14.00 to 14.50
Malleable	14.75 to 15.25
Basic	14.75 to 15.25
Charcoal	18.75 to 19.25

Finished Products.—The market has been decidedly dull, but reports from some quarters indicate that specifications are coming in a little better than they were a week ago. This is particularly true of agencies having Canadian territory where considerable activity is reported, particularly in the structural lines. Locally there are a number of lettings pending, but a large part of the business will not be placed for some time, probably not until after the first of the year. There have been no large lettings recently. Structural shapes and bars and shafting are quiet. There is some inquiry for tin plate and a good deal of inquiry and buying in wire lines. There is a decided feeling that wire prices are as low as they are likely to go and that there is possibility of an advance, and this is bringing some concerns into the market.

Old Material.—The condition of the market remains unchanged. A few sales are reported, but there is little interest in scrap, though very low prices are quoted. The following prices, gross tons f. o. b. Buffalo, indicate the state of the market:

Heavy melting steel	$12.25 to 12.50
No. 1 railroad wrought scrap	14.50 to 15.00
No. 1 railroad and machine cast scrap	13.50 to 14.00
Old steel axles	17.00 to 18.00
Iron axles	23.00 to 24.00
Car wheels	13.75 to 14.25
Railroad malleable scrap	13.75 to 14.00
Machine shop turnings	6.75 to 7.00
Cast iron borings	5.00 to 5.50
Low phosphorus steel scrap	17.00 to 17.50
Old iron rails	15.50 to 16.00
Tank iron	10.75 to 11.00
Sheet iron	6.50 to 7.00
Stove plate	12.00 to 12.50
Pipes and flues	10.25 to 10 75
Grate bars	11.50 to 12.00
Boiler plate	11.00 to 11.50

BIRMINGHAM

Production and Buying Very Nearly Equal in the South.

Birmingham, Ala., Nov. 7.

Pig Iron.—A thorough canvass of the situation reveals the fact that during the month of October there was a pretty good tonnage of iron booked by the different interests of the district. Some furnaces sold from one to two months' make of their plants. Order books are in good shape, and with the regular hand-to-mouth buying practiced by buyers, there is little chance of heavy accumulation of stocks. At the present time, production and buying seem to be running hand-in-hand. Stocks on the yards are not abnormally large; and one good fair-sized buying movement would soon wipe them out. For prompt shipment, and delivery for the remainder of this year, the price is $11 per ton at the furnace. For next year—first and second quarters and first half—the price is $11.50 per ton, at the furnace. Fractional lower prices are heard of in the north, but it is hard to get at the actual facts in that light. Recently the Commerce Commission ruled favorably to the railroads in certain rate advances; and this fact is likely to have

some immediate effect as to buying by certain southern roads, at least. The fall elections of the country will be behind us after tomorrow; and that feature is calculated to lay great stress on the future plans of the large business interests of the country. The demand for charcoal iron is about in keeping with coke iron at this time. Prices range from $22 to $22.50 per ton at the furnace.

Cast Iron Pipe.—Conditions in the water pipe market continue about the same. Inquiries are coming in for next year's requirements of certain consumers. No lettings of consequence are reported. 1910 business is being rounded up, preparatory to next year's requirements. Following are prices per net ton f. o. b. cars here: Four to 6-inch, $20.50 to $21; 8 to 12-inch, average of $19, with $1 per ton extra for gas pipe.

Old Material.—Dealers in scrap report a very inactive business in that line. Consumers of the country seem to be either stocked, or else are content to drag along and take their chances on a further decline. Some very low prices have been made, but in the absence of a real test the following nominal quotations are named, per gross ton f. o. b. here:

Old iron rails	$13.50 to 14.00
Old steel axles	16.50 to 17.00
Old iron axles	17.00 to 17.50
No. 1 R. R. wrought	11.50 to 12.00
No. 2 R. R. wrought	10.50 to 11.00
Dealers' wrought	10.00 to 10.50
Old steel rails	11.00 to 11.50
No. 1 machinery	10.00 to 10.50
No. 1 steel	10.00 to 10.50
Old standard car wheels	12.50 to 13.00
Light castings, stove plate	8.50 to 9.00

Southern Iron Can Now Compete With Foreign Brands.

Office of THE IRON TRADE REVIEW,
942 Henry Bldg., Nov. 5.

Pig Iron.—With a majority of the foundries locally running short hours and half force, there is very little movement either of cast iron, scrap or finished product. Considerable southern iron is now in the market throughout the northwest, particularly in Spokane and Portland, where a favorable freight rate allows it to compete with foreign brands arriving by water. Southern iron is being taken at from 50 cents to $2.25 under the market quotations on other brands. One of the two new brass foundries and a steel castings plant are being arranged for and will shortly begin permanent construction. The lumber mills continue inactive and only a few of the larger ones are doing any considerable repair work. With the slack business prevalent, price cutting among the local jobbing foundries has had the effect to still further demoralize those that refuse to cut prices.

We quote in gross tons, foreign iron ex ship Puget sound or Columbia river, domestic, f. o. b. Pacific coast terminal, as follows:

No. 1 English Jarrow	$23.50 to 24.00
No. 1 Chinese, Hanyang	23.50 to 24.00
English Doncaster	23.50
No. 1 Cleveland	23.50
No. 2 Southern	21.75

Future Quotations on Pig Iron.

(First quality, next year.)

Eglinton	$22.75
Glengarnoch	23.75
Cleveland	23.75
English Doncaster	24.00
English Jarrow	24.00
Hangyang	23.75

Finished material is active and there is a tendency to cut prices on some lines, due to sectional competition. Particularly in Portland and Vancouver, B. C., building operations continue active. Locally considerable reinforcing steel for concrete work is being called for in small lots for immediate consumption. Prices remain unchanged since our last quotation.

Old Material.—Scrap is inactive in all grades, and the only sales noted are deliveries on contracts, and a very occasional new order. The steel companies still continue to stay out of the market for steel scrap. We quote nominal prices, for tons, as follows:

Foundry scrap, No. 1 grade	$19.00 to 20.00
Foundry scrap, No. 2 grade	15.00 to 17.00
Old car wheels	19.00 to 20.00
Railroad wrought	7.00 to 8.00
Miscellaneous steel scrap	6.00 to 8.00
Stove plate, net ton	10.00 to 11.00

British Iron Market.

Pig Iron Tone More Sanguine, Although Lull Apparent.

Office of THE IRON TRADE REVIEW,
Prince's Chambers, Corporation St.,
Birmingham, Eng., Oct. 26.

The brisk run on pig iron last week has been followed by a slight lull, the effect of which was shown in a reduction on the Cleveland market yesterday of about 3d per ton. The selling price for No. 3 warrants was 49s 9d ($12.18) prompt f. o. b. The quotations were weaker than for a week past, but, on the whole, the tone is sanguine, and makers are confident of improving prices next year, raising their quotations from 6d to 1s for next half year's deliveries. The tone is maintained, in spite of rather serious disadvantages. Shipments are considerably below what they usually are at this season of the year, October for many years past having been a good shipping period, yet the stock increases at a fairly heavy pace. Since the beginning of the month, there has been an increase in Connal's stores of 13,426 tons, making the present total 486,485 tons. The month's increase has been the largest for several months. That prices should be maintained in spite of this shows the strength of the trade volume. Business has been restricted further by the rise in the bank rate, and the very unfortunate state of affairs in connection with the shipbuilding lockout. The position in regard to hematite is better than for ordinary warrants, as in this department output apparently is not in excess of the requirements. East coast mixed numbers are 63s 6d ($15.54) with 64s ($15.66) for next year's first quarter bookings.

METAL MARKETS.

New York.

Nov. 7.

Copper.—The important feature of the copper metal market today was the report of the Copper Producers' Association on operations during October. The statement as a whole made a favorable impression, but considerable surprise is noticeable throughout the trade that the high rate of production kept up through the month. The output of refined copper was 126,469,284 pounds, in October, which is an increase of 6,949,301 pounds compared with the September production. The trade generally had been led to expect a decrease. The large domestic and foreign deliveries more than offset the heavy output, however, and the net result was to further reduce supplies. The domestic deliveries aggregated 67,814,172 pounds, and foreign 68,186,913 pounds, and the total shipments 136,001 084 pounds, exceeding production by 9,531,800. This excess in deliveries reduced the stock of marketable copper on hand at all points in the United States, Nov. 1, to 139,261,914 pounds. No material change in prices followed the publication of the statement in the New York market, out a further advance took place in London. Spot copper sold at £58 5s; and three months at £59 5s. These figures represent the highest level attained since last spring. The London market closed easy, spot at £58 3s 9d, and three months at £59 2s 6d.

Exports of copper since Nov. 1 are 5,050 tons.

Tin.—The pig tin market has been less excited this week, and compared with the recent wide fluctuations prices are fairly steady. Very little

buying has been done by consumers or dealers. Arrivals have been heavy since Nov. 1, and the tendency of prices downward. All positions up to February can be had at 36.35c.

The London market has quieted down also. Only 250 tons were traded in today. Both spot and three months closed at £166 10s, up £1 and 15s respectively.

Arrivals of tin since Nov. 1 are 1.380 tons, and there are 965 tons afloat.

Lead.—The lead market is unchanged. A fair demand for the season is noticeable, and outside producers are able to get a slight advance over the leading sellers' quotations of 4.40c, New York.

Spelter.—Spelter continues very firm, but the demand is not good. Prime western can be had at 5.90c in New York, quite generally, and it is probable re-sellers would shade that figure.

Antimony.—The market for antimony is stagnant. Cookson's is 8.12½c; Hallett's is 7.75c, and Hungarian is 7.25c.

Chicago.

Nov. 8.

New Metals.—Copper remains strong and the week just closed witnessed an advance of another ⅛c in both lake and casting copper, the former now being quoted at 13¼c, and the latter 13⅛c, Chicago. The indications are that the increase in the price of copper is a sound one, based on a better consumptive demand, and well-informed dealers are expecting the market to show strength throughout the winter. Prices of spelter have also advanced, carlots now being quoted at 5.77½c, Chicago. This is due to some extent to a forced shutdown on the part of smelters in the southwestern field and also to speculative conditions. The conditions underlying the advance in spelter are not considered as sound as those sustaining the copper market. Movements in tin have been irregular and the net result has left the market in almost precisely the same condition as a week ago. We quote, dealers' selling prices, f. o. b. Chicago, as follows: Lake copper, carload lots, 13¼c; casting, 13⅛c; smaller lots, ¼c to ⅜c higher. Spelter, car lots, 5.77½ to 5.85c; lead, desilverized, 4.35c in 50-ton lots; corroding, 25c per 100 pounds higher; sheet zinc, $7.75 list, f. o. b. La Salle, in car lots of 600-pound casks; pig tin, 37½c. Cookson's antimony, 10½c; other grades, 9¾c to 10¼c.

Old Metals.—The market is showing some improvement and consumers are a little more liberal in their attitude. On account of the strength of the market in new copper, old copper and brass are firm with a tendency to rise. The increase in the price of spelter has resulted in an advance of ¼c a pound in the price of zinc scrap. Dealers are of the opinion that the market is in a very favorable condition from a consumer's standpoint and are advising their customers to purchase at the present level of prices. We quote, dealers' selling prices, f. o. b. Chicago, as follows:

Copper wire, 11¼c; heavy copper, 11¼c; light copper, 10½c; heavy red brass, 10⅜c; heavy yellow brass, 8c; light brass, 6¼c; No. 1 red brass borings, 9¼c; No. 1 yellow brass borings, 6½c; brass clippings, 8c; tea lead, 3.65c; lead scrap, 3.90c; zinc, 4¼c; tin pipe, 32.5c; tin foil, 29.5c; pewter, 23.5c; electrotype plates, free from wood, 4½c; electrotype dross, 3c; stereotype plates, 4½c; stereotype dross, 3¼c; linotype dross, 3¼c; prime slab zinc dross, $78 per ton.

St. Louis.

Nov. 7.

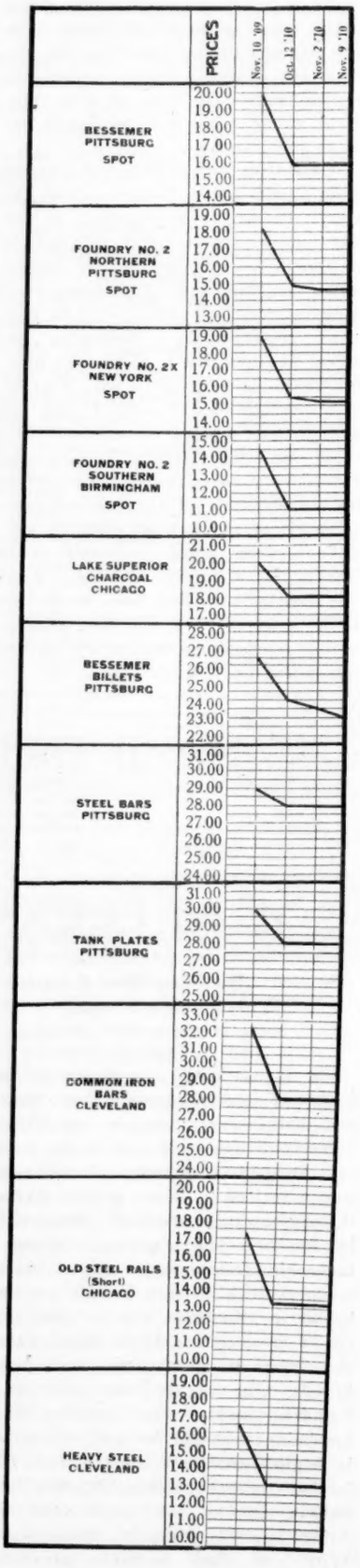
Lead and Zinc.—Choice lots of zinc blende sold as high as $49 a ton in the Missouri-Kansas-Oklahoma district last week, with the base price ranging from $44.50 to $46. The higher base price was realized Friday. The high price of $49 was the highest price reached since the week ending Mar. 19, when choice offerings sold at that figure. The base price of $46.50 also was the highest point reached since the week ending Jan. 29.

At the close of the week, the prices for both lead and zinc were strong, and the outlook was considered good. Spelter rose to 5.72½c to 5.77½c, East St. Louis basis, the highest point reached since Jan. 29. A reported shortage in spelter has given rise to a rumor that a still further rise will be recorded.

The top price paid for calamine was $30 a ton, with a strong demand and good shipments, and the price ranging down to $26 and $24. The average price quoted for all grades of calamine was $28.44. The surplus has increased, and one camp is estimated to have 600 tons in bins.

Pig lead was stronger, and reached a top price of 4.30c, East St. Louis, compared to 4.27½c for the previous week. The best price paid for lead ore, however, was $53, the same figure realized the week before. An average price for all grades was $52.73, compared to $52.76 the previous week.

PRICE CHART



GENERAL OFFICES

Of Republic Iron & Steel Co. to Locate at Youngstown.

Pittsburg, Nov. 9. (By wire.)

The Republic Iron & Steel Co. will erect a six or seven-story office building at Youngstown, O., and all of the general offices of the company will be removed from Pittsburg to that city. Chairman John A. Topping will retain his office in New York City. It is expected that work on the proposed new building, which will be located near the company's plants, will be started shortly and that the offices will be moved from Pittsburg about July 1, 1911. The offices to be transferred include those of the executive, operative, traffic, sales and purchasing departments. The company, which occupies the seventeenth and eighteenth floors of the Oliver building, will maintain a sales office in Pittsburg. The decision to remove the offices from Pittsburg was made late last week at a meeting of the board of directors held in New York.

SUCCESS OF BAILEY FURNACES.

The Berger Mfg. Co., of Canton, O., has placed orders with George J. Hagan, Pittsburg, Pa., sole licencee for the Bailey patents, for three additional combination sheet and pair furnaces, making a total of six furnaces installed in this plant within the last seven months, including time consumed in trying out the first furnace, which was installed under a guarantee to save 25 per cent in cost of fuel. The guarantee was exceeded in that the result of the test showed a saving of 40 per cent over the former furnace.

On the old furnaces an average of 682 pounds of coal per ton of finished sheets was attained, but with the combination furnace the average is now 404 pounds of coal. Considering cost of fuel, there is actually a greater saving than 40 per cent, due to the combination furnace being equipped with stoker using slack for fuel.

Mr. Hagan, district sales agent for the American Stoker Co. of New York, reports the following sales: Six stokers on second order to Canton Sheet Steel Co.; six stokers to Berger Mfg. Co., on duplicate order, and also order from Allegheny Steel Co. These machines are all eccentric shaft driven.

The plans and specifications sent out on furnace requirements for the Gary plant of the American Sheet & Tin Plate Co. call for combination sheet and pair furnaces of the Bailey type. Several of the plants of the American Sheet & Tin Plate Co. are already using the Bailey furnace under shop rights.

The McKeesport Tin Plate Co. has placed an order for additional furnaces and gas producers such as will be required for the second addition to the Port Vue works with Mr. Hagan.

The Allegheny Steel Co., of Pittsburg, has placed an order with Mr. Hagan to install in its plant at Brackenridge, Pa., combination sheet and pair furnaces of the Bailey type, to be erected under the Bailey patents.

NEW MILLS

Of the Cambria Steel Co. to be Placed in Operation Soon.

Pittsburg, Nov. 9. (By wire.)

The Cambria Steel Co., Johnstown, Pa., this week is trying out its new 8-inch Morgan continuous merchant mill. The new mill has a capacity of about 6,000 tons a month and rolls rounds and squares from ¼ to ¾-inch, and flats from ⅜ to 1¼ inches in width and from ⅛ to ½ inch in thickness. The new mill will add materially to the capacity of the company's bar department and will enable this concern to take care of its constantly increasing business in this line. The company is also building a 12-inch Morgan, semi-continuous merchant mill, which will be ready for operation about Feb. 1. The new rod mill will be completed about Feb. 15 and the wire mill will be started a few months later.

Aliquippa No. 1 stack of the Jones & Laughlin Steel Co. went out of blast, Oct. 29, for repairs.

CONDITIONS RIPE

For Good Railroad Orders—Allotment of Rail Tonnage.

New York, Nov. 9. (By wire.)

The order for 3,300 tons of rails for the Erie railroad has been divided principally among Illinois, Carnegie and Lackawanna Steel companies, while a small tonnage went to the Bethlehem Steel Co. The bulk of the Norfolk & Western rail tonnage usually goes to the Corporation.

Rail makers believe that upwards of 500,000 tons will be placed by the first of the year. Conditions are bright for developments very soon. The Cambria Steel Co. has taken 1,600 tons for the Lexington & Eastern and the Illionois Steel Co. reports 1,500 tons, both orders for prompt delivery. Pending car business is estimated at between 7,000 and 8,000 tons.

The Newport News Ship Building & Dry Dock Co. has submitted the lowest bid on torpedo boat destroyers, but it is expected that the six boats will be divided among different builders.

The pig iron market shows little change and tonnage is moderate. A Jersey buyer has taken 1,500 tons of No. 3 at about $14.50, furnace. A western steel company is out with a new inquiry for 1,000 tons of ferromanganese.

McKee is Engineer.—Arthur G. McKee, Cleveland, has been appointed engineer of the Zenith Furnace Co., in connection with that company's new blast furnace referred to on page 857 of this issue. No definite plans regarding the construction of this stack has yet been completed. It will probably be similar to the company's present furnace. Construction work will probably begin next spring.

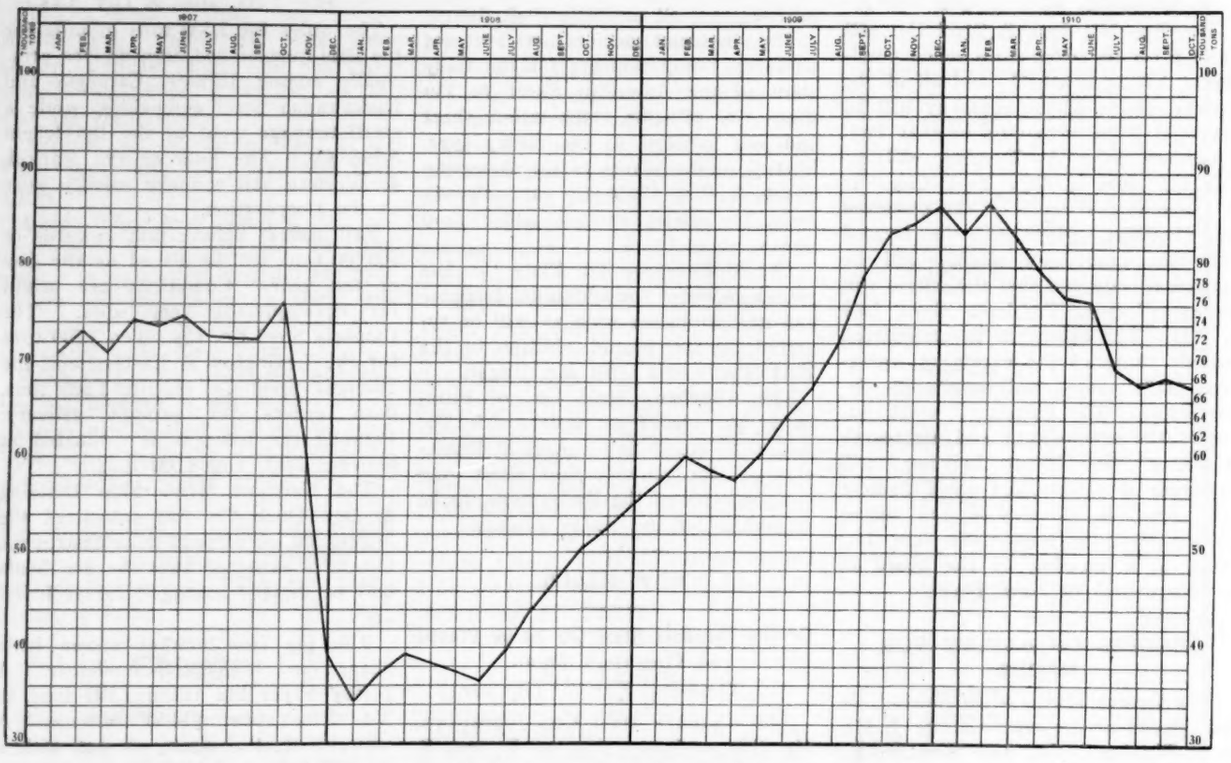
Finishing touches are being added to the new three-high plate mill and the jobbing mill of the Youngstown Iron & Steel Roofing Co. and the new departments will be placed in operation within the next ten days.

What will be the Effect of the Elections on Business?

SEE DAILY IRON TRADE REVIEW of today for news from all parts of country, including interviews with prominent iron and steel manufacturers.

A copy of the Daily will be sent you on request.

DAILY AVERAGE PIG IRON OUTPUT FLUCTUATIONS



RECORD ATTENDANCE

Expected at N. F. A. Convention—Will Discuss Timely Topics.

Indications point to a banner registration list for the attendance at the fourteenth annual convention of the National Founders' Association at the Hotel La Salle, Chicago, Wednesday and Thursday, Nov. 16 and 17. The administrative council will hold its third meeting of the year the day preceding the convention, and the banquet for past and present members will take place in the evening. Ex-president Henry A. Carpenter, of Providence, R. I., will be the toastmaster.

No public announcement of the program of the convention will be made beforehand, but members of the association have already been notified as to some of the subjects which will be laid before them for consideration; these include topics foremost in the mind of the employing foundryman of today. The annual banquet will take place at the La Salle, Wednesday evening, Nov. 16; Geo. F. Steedman, of the Curtis & Co. Mfg. Co., St. Louis, will act as toastmaster and the association will have as its guests President Cyrus Northrup, of the University of Minnesota, and Hon. Frederick C. Stevens and Hon. Frank M. Nye, members of congress from St. Paul and Minneapolis.

PRODUCTION OF NAIL PLATE IN 1909.

The production in the United States of iron and steel plate for the manufacture of cut nails and cut spikes in 1909, as ascertained by the American Iron and Steel Association, amounted to 63,746 tons, against 45,747 tons in 1908, an increase of 17,999 tons, or over 39.3 per cent. Of the total production in 1909 about 47,822 tons were steel and about 15,924 tons were iron, against about 30,265 tons of steel and about 15,482 tons of iron in 1908, an increase in steel nail and spike plate of 17,557 tons and in iron nail and spike plate of 442 tons.

In 1909 there were 12 plants which rolled nail or spike plate, as compared with 13 plants in 1908 and 14 plants in 1907. The number of idle plants in 1909 was 5. All these plants are equipped with machines for the manufacture of cut nails or cut spikes.

Placed in Operation.—The new plant of the S. H. Roberts Boiler & Tank Co., at Queen Junction, Pa., along the Bessemer & Lake Erie railroad, has been completed and placed in operation. The main building is 110 x 160 feet, equipped with traveling cranes and modern equipment for the manufacture of boilers, tanks, car tanks and riveted steel work. The old plant of the company, at Evans City, Pa., is being operated as a repair shop.

Will Start Work.—Work will be started this week at the plant of the Reliance Steel Casting Co., Pittsburg, located at Twenty-eighth and Smallman streets, Pittsburg, which was recently purchased from the Scaife Foundry & Machine Co. The plant has been remodeled, an open-hearth furnace, core ovens and annealing furnaces having been built for the manufacture of steel castings.

The Buckeye Engine Co., Salem, O., through its Pittsburg office, has sold a 350-horsepower steam engine to the Parkersburg Milling Co., Parkersburg, W. Va.; a 250-horsepower steam engine to the Snowshoe Brick Co., Snowshoe, Pa., and a 150-horsepower Buckeye engine to the Liberty Mfg. Co., Pittsburg.

SMALLER DAILY AVERAGE OUTPUT

The output in October of coke and anthracite pig iron as shown by the complete returns was 2,086,205 tons, compared with 2,048,461 tons in September, an increase of 37,744 tons in October. However, it should be borne in mind that October had one more working day than September, and this being considered, the increase was less than normal daily average. This statement is borne out by the fact that the daily average production in October was 67,297 tons, compared with 68,282 tons in September. October's daily average was the smallest since June, 1909.

MONTHLY PRODUCTION.

	1910.	1909.	1908.
January	2,599,995	1,788.164	1,043 374
February	2,428.937	1,682,470	1,086 809
March	2,588,736	1,822,644	1,229,856
April	2,477,700	1,730,603	1,155,122
May	2,374,802	1,865.757	1,168,002
June	2,288,279	1,930.029	1,106.300
July	2,158,124	2,088 620	1,229 604
August	2,103,791	2,232,642	1,366,019
September	2,048,461	2,375,589	1,416,252
October	2,086,205	2,604,037	1,573,824
November		2,532,740	1,582,314
December		2,682,702	1,723,664
Total	23,155,030	25,337,092	15,680,140

The output of pig iron by the merchant stacks in October was 651,981 tons, compared with 635,266 tons in September, an increase for October of 16,715 tons. The non-merchant or steel plant stacks produced in October 1,421,297 tons, compared with 1,395,445 tons in September, a gain in October of 25,852 tons. Thus, the steel plant furnaces showed a comparatively larger reduction of output than the merchant stacks, and the figures touching on the blowing out of stacks bears this out. The number of stacks in operation on the last day of September was 234; the number active on the last day of October was 230, a net loss of four stacks from the active list in October. Careful analysis of the returns shows that the non-merchant or steel plant furnaces blown out in October were nine, while three were blown in, making a net loss of six non-merchant stacks from the active list. On the other hand, six non-merchant stacks were blown out in October, and eight were re-lighted, making a net gain of two merchant stacks added to the active list in October. In all, 15 stacks were blown out and 11 were re-lighted during October, making a net loss of four from the active list.

The production of spiegel in October was 4,973 tons, a loss of 6,373 tons as compared with the output of spiegel in September. The October production of ferro was 7,954 tons, an increase of 1,550 tons as compared with the output of September.

AVERAGE DAILY PRODUCTION.

	1910.	1909.
January	83,871	57,683
February	86,747	60,093
March	83,508	58.793
April	82,790	57 087
May	76.607	60,218
June	76,276	64,334
July	69.617	67 375
August	67.864	72,021
September	68,282	79,186
October	67,297	84,011
November		84,425
December		86,539

While Pennsylvania showed the largest increase of output in October of any of the states or group of states, it also showed the largest number of furnaces blown out in the same month, a total of seven. Alabama lost one from the active list, Virginia one, and Indiana one. Ohio added one stack to the active list in October, New York one, Wisconsin one, Georgia one and Minnesota one.

BLAST FURNACE NOTES.

The Anniston Iron Corporation blew in one stack, Oct. 1, at Woodstock, Ala.

The Birmingham Coal & Iron Co. relighted No. 1 stack at Vanderbilt, Ala., on Oct. 17.

The Central Iron & Coal Co. relighted its Holt, Ala., furnace on Oct. 28.

The Sheffield Coal & Iron Co. blew out on Oct. 17 for relining the one Sheffield, Ala., stack that had been operating.

Lady Ensley stack of the Sloss, Sheffield Steel & Iron Co. was blown out, Oct. 14.

B stack of the Colorado Fuel & Iron Co. was blown in Oct. 2, and A stack was blown out Oct. 27.

B stack of the Federal Furnace Co. was relighted Oct. 20.

The Illinois Steel Co. took the blast off of South Works new No. 7 stack on Oct. 24.

Inland Steel Co.'s stack went out for relining, Oct. 6.

The Zenith Furnace Co. relighted its Duluth, Minn., stack, Oct. 17.

The New York State Steel Co. blew out its Buffalo furnace, Oct. 14.

The Wickwire Steel Co. lighted its new stack, Oct. 1. This stack will be known as Harriet Y, while the older stack will be known as Harriet X.

The Carnegie Steel Co. blew out and blew in each one Edgar Thomson stack in October; blew out one Duquesne stack, Oct. 27, one South Sharon stack on Oct. 30, and one Mingo stack on Oct. 10.

Top stack of the Wheeling Steel & Iron Co. was out of blast three weeks in October for repairs.

The Virginia Iron, Coal & Coke Co. blew out its Dora stack on Oct. 15.

The Northwestern Iron Co. relighted its B furnace at Mayville, Wis., on Oct. 13.

OCTOBER BLAST FURNACE REPORT.

STATES.	NO. OF STACKS.	NO. IN BLAST ON LAST DAY OF MONTH. OCT.	NO. IN BLAST ON LAST DAY OF MONTH. SEPT.	ACTUAL TONNAGE MAKE. MERCHANT.	ACTUAL TONNAGE MAKE. NON-MERCHANT.	TOTALS. OCT.	TOTALS. SEPT.
Pennsylvania	157	92	99	199 229	713,454	912.683	896,109
Ohio	71	41	40	127.055	298,710	425,765	407,025
Alabama	45	23	24	109,185	52,109	161,294	149,990
Virginia	24	9	10	32,310	———	32,310	34,686
New York	26	16	15	70,210	74,141	144,351	147 665
New Jersey	7	3	3	19.115	———	19 115	18.773
Illinois	26	16	16	27,024	162,595	189,619	197,325
Colorado	6	3	3				
Indiana	8	4	5	15,737	116,979	132,716	133,047
Maryland	4	3	3				
Wisconsin	6	3	2				
Kentucky	7	2	2				
W. Virginia	4	1	1	33,749	3,309	37,058	42,296
Tennessee	19	8	8				
Washington	1	1	1				
Georgia	2	1	0				
Texas	3	0	0				
Minnesota	1	1	0	18,367	———	18,367	13,795
Michigan	3	3	3				
Missouri	1	0	0				
Spiegel—All states						4,973	11,346
Ferro—All states						7,954	6,404
Total	421	230	234	651,981	1,421,297	2,086,205	2,048,461

ENGINEERS INSPECTED

New Aliquippa, Pa., Plant—Operating More Equipment.

About 300 members of the Engineers' Society of Western Pennsylvania, Pittsburg, on Saturday, Nov. 5, inspected the Aliquippa, Pa., works of the Jones & Laughlin Steel Co. A special train carrying the members of the society and their guests left Pittsburg over the Pittsburg & Lake Erie railroad at 1:30 p. m., and on the return trip left Aliquippa at 5:30 o'clock. Following an inspection of the blast furnaces the party was taken to the various departments of the new plant on a special train over the switching lines built by the steel company.

Furnace No. 4 has been completed, but will not be blown in for some time. The new wire mills were started last week, and it is expected that the open-hearth department, consisting of four 250-ton Talbot tilting furnaces and one 400-ton mixer, will be placed in operation shortly. The pump house has a capacity of 96,000,000 gallons per day. The blooming mill is a 40-inch train and is driven direct by a 20,000-horsepower Mackintosh, Hemphill & Co. twin tandem compound condensing engine. Three blast furnaces, the tin plate mill, the rod mill and wire mills at the new plant are now in operation.

MEETING OF PITTSBURG FOUNDRYMEN.

The regular monthly meeting and dinner of the Pittsburg Foundrymen's Association was held Monday evening, Nov. 7, at the Fort Pitt hotel, Pittsburg. In the absence of President J. S. Seaman, of Seaman-Sleeth Co., Vice President W. A. Bole presided. A letter was read from Dr. Joseph A. Holmes, thanking members of the association for their interest in his appointment as director of the Bureau of Mines. J. A. Gearhart, of Gulick, Henderson & Co., Pittsburg, read a paper on "Inspection of Castings from the Inspector's Standpoint, Brass, Steel and Iron." A general discussion followed in which many of those present took part.

New Ore Book.—Rukard Hurd, secretary of the Minnesota Tax Commission, has prepared a volume entitled, "Hurd's Tables of Iron Ore Values," which will be published immediately after the announcement of 1911 prices. The text gives the determining method, schedules of ore values for every per cent and fraction of every grade of ore, from 40 to 61 per cent; also general statistical data of the Lake Superior iron ore district from 1855, and for each range for every year, shipments, rail and lake freights, ore and pig iron prices, geological and mineralogical description of the iron ore reserves of the United States, and the iron ore valuation and method of the Minnesota Tax Commission. The price has been fixed at $5, and the book will be bound in full leather.

OPTION TAKEN ON CAYUNA RANGE LEASE.

The Inland Steel Co., Chicago, has taken an option to lease 120 acres of iron ore land on the Cuyuna range, located about 3 miles from Crosby, Minn. The lease is made by Gust Carlson and P. H. Nelson, of Duluth, and Thomas York, of Hibbing, who own the fee of the land. The extent of the ore body in the 120 acres has not been fully determined, but is popularly supposed to approximate 20,000,000 tons. Extensive borings are being made at present to accurately estimate the quantity of ore available and also its analysis. It is known, however, that in some places the ore body is very thick and one drill is said to be 250 feet in ore and not yet through the mineral. Under the terms of the lease it is understood that the minimum on which the royalty is to be paid is 50,000 tons per year, shipments to begin next spring.

Personal.

Kenneth Seaver has been appointed chief engineer of the Harbison-Walker Refractories Co.

George E. Daniels, Philadelphia, has accepted the position of manager of the Oakland Motor Car Co., Pontiac, Mich.

James F. Barr, Detroit representative of Manning, Maxwell & Moore, has resigned his position to accept an office with Gear Grinding Machine Co., Detroit.

G. S. Vickery, chief draftsman, has been promoted to superintendent of the frog and switch department of the Pennsylvania Steel Co., succeeding C. W. Reinoehl, deceased.

Capt. I. N. Bean, formerly at the head of the Northwestern Iron Co., of Mayville, Wis., is seriously ill at his home on Prospect avenue, Milwaukee, following a paralytic stroke.

A. E. Hanna, formerly secretary of the Dominion Wire Co., Montreal, now merged with the Steel Co. of Canada, has been appointed sales manager at Winnipeg for the Steel Co. of Canada.

Dr. F. H. Hirschland has been elected vice president of the Goldschmidt Thermit Co., succeeding E. Stutz, who recently retired. Mr. Stutz was succeeded as general manager by William C. Cuntz.

John Lambert and Harry Bronner were elected members of the executive committee of the Republic Iron & Steel Co. at the recent meeting of the directors, succeeding L. C. Hanna and E. W. Oglebay.

C. V. Erdman, formerly manager of one of the American Sheet & Tin Plate Co.'s mills, has been appointed manager of the Phillips Sheet & Tin Plate Co.'s plant at Clarksburg, W. Va., succeeding E. L. Cronemeyer, who has been appointed assistant manager of the plant at Weirton, W. Va., operated by the Phillips company.

Owing to poor health, Edwin W. Olds, for the past 14 years superintendent of rolling stock for the Milwaukee Electric Railway & Light Co., has secured an indefinite leave of absence and will take an extended trip with his wife. During his absence Howard Mullett will act as superintendent of rolling stock.

Obituary.

George D. Robbins, president and general manager of the Niles Steel Roofing Co., Niles, O., and president of the Dollar Savings Bank, died at Niles Nov. 7, after some months of illness, aged 56. When the Niles Car Mfg. Co. was organized Mr. Robbins was chosen president and remained a director until his death. He was also a director in the Niles Forging Co.

Lyman C. Smith, widely known as a typewriter manufacturer, died at Syracuse, N. Y., Nov. 5. He was born at Torrington, Conn., March 31, 1850. Beside being widely interested in typewriting manufacture, he was a stockholder and director in several railroad and great lake transportation companies, the most important of the latter being the United States Transportation Co.

Lelander M. Morris, founder and former owner of the old Iron City Foundry Co., Pittsburg, died Nov. 7 at the family residence at Oakmont, Pa. Mr. Morris was born in Lisbon, O., on Aug. 1, 1832. After devoting a number of years to the management of the Iron City Foundry Co., he retired from business in 1894. Mr. Morris was president of the Oakmont National Bank and the Oakmont board of trade.

IRON AND STEEL SECURITIES

Owing to the approaching elections, trading on the New York stock exchange was less active last week. The general market tone remained firm, however, and prices, barring occasional setbacks, gained.

Monday the market was dull; prices declined early, but recovered and closed steady; grain markets were lower. Tuesday, stocks were dull with narrow price changes; wheat declined to the lowest price since harvest. Wednesday's market again was dull, but strength of the metal stocks helped to maintain the general list; wheat declined to the lowest prices on the crop. Thursday, the market was more active, and advanced under the leadership of Steel common and the metal shares. Friday, stocks opened strong and higher, but broke later, and after a slight recovery, closed rather heavy; wheat sold at a new low price, but later recovered the loss. Saturday the market was dull but firm and closed higher.

Money on call closed at nominally 4 per cent, but ranged during the week from 3¼ to 4¾ per cent, the latter being the highest rate in six months. Time money was firm in tone and closed high; the demand was active and large. Actual figures of clearing house banks showed: Loans decreased $5,831 200; deposits, decreased $10,929,500; reserve, decreased $6,547,600; surplus, decreased $3,815,225; and the percentage of reserve 25.5, compared with 25.8 the week previous. Non-member banks and trust companies showed: Loans, increased $2.147,200; net deposits, decreased $2,581 200; and the percentage of reserve, 17.2, against 17.3. Bank clearings were $1,996,971,539, against $1,860,084,128 last week, and $2,111,199,819 two weeks ago. The fortnightly railway association figures showed that idle freight cars numbered 7,235, the lowest idle surplus this year. Commercial failures for the week were 258, against 257 the preceding week, and 249 the corresponding week last year. Shares were sold to the number of 2,519,600, against 3,379,000 the preceding week, and 3,762,400 the corresponding week last year. Bonds, exclusive of government bonds, were sold to the amount of $10,619,000, compared with $11.808,000 the preceding week and $20,297,000 the corresponding week last year.

	Closing Quo. Nov. 5	Changes in week	Annual Meeting Date 1910	Stock Outstanding	Basis	Dividend Last Dividend	Dividend Date Last Div. Pay.
Allis-Chalmers	9¾	— ¼		$19,820,000			
Allis-Chalmers, pr	34¼	+ ¼		16,150,000	7 cum	1¾ Q.	Feb., 1904
American Can	10⅛	+ ⅛	Feb. 2	41,233.300		1¾ Q.	
American Can, pr	77	+1½		41,233.300	7 cum.	1¾ Q.	July, 1913
Am. Car & Fdy	55⅜	+1½	June 24	30,000,000		½ Q.	Oct., 1910
Am. Car & Fdy., pr	115	+1		30.000.000	7 n. c.	1¾ Q.	Oct., 1910
American Loc	40	— ½	Oct. 18	25,000.000	5	1¼ Q.	Aug., 1908
American Loc, pr	106½	+ ⅜		25,000.000	7 cum.	1¾ Q.	Oct., 1910
American Ship	79	.....	Oct. 12	7.600.000	4	1 Q.	Sept., 1910
American Ship, pr	109	.....		7,900,000	7 cum.	1¾ Q.	Oct., 1910
Am. Steel Foundries(new)	47¾	—1¾	Dec. 1	17.184.000		1¼ Q.	Nov., 1910
Barney & Smith	30	+5	June 7	2,000,000	4	1 Q.	Dec., 1910
Barney & Smith, pr	105	+10		2,500.000	8 cum.	2 Q.	June, 1908
Bethlehem Steel	32	— ½	April 5	14.862.000			
Bethlehem Steel, pr	61⅜	+ ⅜		14.908.000	7 n. c.	¾ Q.	Feb., 1907
Cambria Steel	44	— ⅝	Mar. 15	45.000.000	5	1½ Q.	Nov., 1910
Cambria Iron	45	.....		8,468.000*	4	2 S. A.	Oct., 1910
Chicago Pneumatic Tool	40½	+ ½	Feb. 21	6.485.800	4	1 Q.	Oct., 1910
Colorado Fuel	34¾	+ ¾	Oct. 17	34.235.500		1¾ Q.	Apr., 1902
Crucible Steel	13	+ ⅛	Oct. 19	24.578.400		3½.	
Crucible Steel, pr	79	+ ¾		24,436,500	7 cum.	1¾ Q.	Sept., 1910
Empire Steel	12	+2	Feb. 23	1,254.770			
Empire Steel, pr	55	.....		2,500.000	6 cum.	3 S. A.	July, 1910
Fay & Egan	70	.....	Feb. 15	1.000.000	6	3 S. A.	Feb., 1909
Fay & Egan, pr	115	.....		1.000.000	7 cum.	1¾ Q.	Sept., 1910
General Electric	154⅞	— ⅜	May 10	65,179.600	8	2 Q.	Oct., 1910
Harbison-Walker	32	.....	Jan. 17	18.000.000		½ Q.	Aug., 1910
Harbison-Walker, pr	93	.....		9,600,000	6 cum.	1½.	Oct., 1910
International Pump	44⅝	+1¼	May 10	17.762,500		1 Q.	Nov., 1910
International Pump, pr	83¾	+ ⅞		11,350,000	6 cum.	1½ Q.	Aug., 1910
Lackawanna Steel	39	—1	Mar. 9	34.978.000			
Lake Sup. Corp	25⅞	— ⅛	Oct. 5	40.000.000			
New York Air Brake	77	—2	June 16	10.000.000	8	1½ Q.	Oct., 1910
Niles-Bement-Pond	98	.....	Feb. 2	8,500.000	6	1½ Q.	Sept., 1910
Niles-Bement-Pond, pr	104	.....		2,000.000	6 cum.	1½ Q.	Aug., 1910
Otis Elevator Co	49	+1	Mar. 21	6.375.000	3	1½ S. A.	Oct., 1910
Otis Elevator Co, pr	94	+1		6.310.000	6 n. c.	1½ Q.	Oct., 1910
Pa. Steel	60	.....	May 9	10,750.000			
Pa. Steel, pr	105¾	— ¾		16,500.000	7 n. c.	3½ S. A.	Nov., 1910
Pittsburg Coal Co	21½	+1½	Mar. 8	28,104,600			
Pittsburg Coal Co., pr	73½	+2¼		27.071.800	7 cum.	1¾ Q.	Oct., 1910
Pressed Steel Car	35¼	+ ½	Feb. 16	12,500.000		1 Q.	Aug., 1904
Pressed Steel Car, pr	96½	— ½		12,500,000	7 n. c.	1¾ Q.	Nov., 1910
Pullman	166⅞	—2½	Nov. 9	120.000.000	8	2 Q.	Nov., 1910
Railway Stl. Spring	35½	+ ½	Mar. 3	13,500.000	2	1 S. A.	Oct., 1908
Railway Stl. Spring, pr	93¾	.....		13.500.000	7 cum.	1¾ Q.	Dec., 1910
Rep. Iron & Steel	35½	+1½	Oct. 19	27,191.000			
Rep. Iron & Steel, pr	99⅛	+1½		25,000.000	7 cum.	1¾ Q.	Oct., 1910
Sloss-Sheffield	51⅝	— ⅜	Mar. 9	10.000.000	5	1¼ Q.	Sept., 1910
Sloss-Sheffield, pr	114½	.....		6.700.000	7 n. c.	1¾ Q.	Oct., 1910
U. S. Pipe & Fdy. Co	17¼	— ¼	June 22	12,106,300	2	1 Q.	Dec., 1910
U. S. Pipe & Fdy.Co.,pr	56	—4		12,106,300	7 n. c.	1¾ Q.	Sept., 1910
U. S. Steel	81	+2¾	April 18	508,302.500	5	1¼ Q.	Dec., 1910
U. S. Steel, pr	118½	—1⅜		360.281.100	7 cum.	1¾ Q.	Nov., 1910
U. S. Steel 5s	104	+ ¼		463.798.000	5		
Va. Iron, Coal & Coke	54	.....	Sept. 20	9,073.680		5. †	Oct., 1907
Westinghouse Elec	73½	— ½	July 27	3,998,700*		10½ Q.**	Oct., 1910
Westinghouse Air Brake	140	—2½	Oct. 4	13,750.000*		5 Q. ‡	Oct., 1910

Par value of shares, $100, except those starred (*), $50.
**Includes 8¾ per cent on back dividends.
†Stock.
‡Includes 1½ extra and 1 special.

Copper Stocks.

New York.—Amalgamated Copper closed 71¼, a net gain of 2¼.

Boston.—Butte Coalition closed 21¼, a net gain of 1¼; Calumet & Arizona closed 57, a net loss of 2¼; Calumet & Hecla closed 560, no change; North Butte closed 35¾, a net gain of 2; Quincy Mining closed 77, no change.

Financial Notes.

The American Radiator Co. has declared the regular dividend of 1¾ per cent on preferred stock, payable Nov. 15; and regular quarterly dividend of 2 per cent on common, payable Dec. 31.

The Railway Steel Spring Co. has declared the regular quarterly dividend on preferred stock of 1¾ per cent, payable Dec. 20.

Peter Donaldson, of James Watson & Co., Glasgow, is in New York.

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THE AVERAGE PAID CIRCULATION OF THE IRON TRADE REVIEW FOR THE ISSUES OF THE FOLLOWING MONTHS WAS:

January, 1910	5,681
February	5,703
March	5,754
April	5,793
May	5,827
June	5,842
July	5,864
August	5,875
September	5,895
October	5,955

November 10, 1910

THE INCREASED OUTPUT OF NAILS.

The appearance of the official statistics of nail production in 1909 shows that in this industry there was rapid growth last year. We are of course thoroughly familiar with the rapid increase in steel consumption as a whole, but the growth in tin plate and nails is a growth relative to the whole. Last year's pig iron production showed an entirely negligible increase over the previous record made in 1907, but the production of tin plate and of nails has shown a very large increase. Until last year the record for nail production was held by 1904, and statistics of production from that year to the present are given below. It should be noted, however, that the large production in 1904 was due chiefly to the chance of the market. The year was not an exceptionally heavy one for consumption, and very naturally, because the year was an "off year" for iron and steel products generally. There was a sharp break in the market in August, 1904, and in the fall nails were bought very generally for distribution and consumption in the following spring.

	Nail production. Kegs of 100 pounds.		
	Cut.	Wire.	Total.
1904.....	1,283,362	11,926 661	13.210.023
1905.....	1,357,549	10,854,892	12.212 441
1906.....	1,189,239	11,486.647	12.675,886
1907.....	1,109.138	11.731 044	12,840.182
1908.....	956,182	10.662,972	11,619.154
1909.....	1,207,597	13,725,053	14,932,650

The gain in total nail production last year over the preceding year was 28 per cent, and over 1904, the previous record year, 13 per cent. Relative to pig iron, comparison of 1909 can be made with 1906 and 1907, the three years showing practically the same pig iron production, but nails in 1909 showing a gain of precisely 20 per cent over the average of 1906-7.

It will be observed from the table given above that the production of cut nails has been practically stationary. Clearly production cannot be said to be declining, when that of 1909 exceeded that of any of the three preceding years. The wire nail has apparently gone as far as it is to go in supplanting the cut nail, the movement having been rapid in the early years. The first estimate of wire nail production was 600,000 kegs, for 1886, when the cut nail production was 8,160,973 kegs. For the next year, wire nail production was estimated at 1,250,000 kegs, cut nails being reported at 6,908,870 kegs.

Tin plate production in 1909, as recently reported, was 612,951 gross tons, against 57,562 tons in 1906 and 514,775 tons in 1907, the two years which showed a pig iron production substantially the same as in 1909.

The question will naturally arise what products are falling behind when certain products gain relative to total pig iron production? This question is not easily answered. Of course there has been a loss in rails, last year's production being only 3,023,845 tons, against nearly 4,000,000 tons in 1906 and 3,600,000 tons in 1907. In plates there has probably been some loss, but the extent is not known, as the official statistics for last year have not yet been compiled. Along these lines a partial answer can be given, and the remainder of the answer probably lies in the fact that the total production of rolled steel is increasing, relative to total production of pig iron, because there is a relative loss in the production of castings. Then, too, there is the fact that each year the use of old material increases, not simply in absolute tonnage, but also relative to pig iron. This increase is largely concealed, for there is little, if any, increase in iron mill operations, and the increase in the open-hearth furnace is not disclosed because with the old material used there is a much larger quantity of new scrap consumed. The consumption of scrap by the foundries is very large, so that their output of castings may be increasing more than their consumption of pig iron. At one time, the only scrap consumed by foundries was iron scrap, but at the present time many important foundries are using as much as 20 per cent of steel scrap in their melt. Year by year the amount of iron and steel products fabricated into useful forms gains as compared with the amount of iron obtained from smelting ore.

STEEL CORPORATION EARNINGS.

The United States Steel Corporation has lately been giving an exhibition of its ability to make large earnings with average realized prices much lower than formerly, the improvement in its position being due to the great increase in tonnage. Quarterly earnings have been as follows:

	1909.	1910.
First	$22,921,269	$37,616.876
Second	29,340.492	40,170,960
Third	38 246,907	37,365,187
Fourth	40,982,746	

Tonnage output was practically the same in the fourth quarter of last year and the first quarter of this, and it is

not altogether clear why earnings should have decreased. In the second quarter there was a decrease in tonnage, and there was a decrease in open market quotations. Nevertheless, earnings increased, not only over the preceding quarter, but over the average of the two preceding quarters. Evidently that was brought about by the working out of old low priced contracts, so that average realized prices increased while open market prices were declining. In other words, the average realized prices in the fourth quarter of last year and the first quarter of this year were very materially below the openly quoted prices. Those open prices, however, were much below the average of prices in 1906 and 1907. At the high point last winter, prices of finished steel products were not far from $4 a ton lower than at the high point in 1907. The difference in realized prices was very much greater, for in 1907, the last of three years of very good business and slowly advancing prices, old contracts had been worked out and realized prices were close to the openly quoted market.

Earnings per calendar year have been as follows:

1905	$119,787,658
1906	156,624,273
1907	160,964,674
1908	91,847,711
1909	131,491,414

This year's earnings will be approximately $150,000,000 if the fourth quarter shows $35,000,000. Conservative estimates are for about $3,000,000 less than this.

A very interesting comparison can be made by selecting the twelvemonth ended June 30 last for comparison with previous calendar years. The calendar years of greatest activity in the industry have been 1906, 1907 and 1909, each showing between 25,000,000 and 26,000,000 tons of pig iron produced, in 1906 and 1907 with high prices all along the line, in 1909 with widely fluctuating but low average prices.

In the twelvemonth ended June 30 last, the country made within 250,000 tons of 30,000,000 tons of pig iron, the twelvemonth thus being a much more active one than any calendar year. In the twelvemonth, the United States Steel Corporation's earnings amounted to $157,017,489. Its earnings in its two best calendar years, 1906 and 1907, averaged a trifle under $159,000,000. In each of those years, the country made about 25,500,000 tons of pig iron, and prices were high. In the twelvemonth ended June 30 last, the country made about 29,750,000 tons of pig iron, and prices averaged very much lower. The Steel Corporation, however, earned about 99 per cent as much as in 1906-7.

Thus in a period of relatively low prices the Steel Corporation practically duplicated its previous high record of earnings, and did so by increased tonnage. The business was not taken from independents, for there is no reason to suppose the Corporation made a larger percentage of the country's total tonnage than formerly.

If the present open market is maintained, with neither advance nor decline, the prospect is that average realized prices will be higher than in the twelvemonth ended June 30 last. The decrease in earnings in the quarter just closed, and the prospective decrease in the current quarter, are attributable to decreased tonnage. There is the prospect, then, that with an unchanged market and general demand as indicated by an annual rate of 30,000,000 tons of pig iron, the Steel Corporation should earn well in excess of $150,000,000 a year, while with enlarged demand there is room for a decline in prices or an increase in earnings.

As there is no prospect of any material increase in dividend disbursements, there is room for a continuance of fairly heavy expenditures for improvements. In the past four years, expenditures have been largely for increases in capacity. The capacity of the country is well in excess of any demand thus far experienced, while in the past plans for increased capacity have been adopted only when existing capacity was pushed, and mills were falling farther behind in deliveries. The indication is that the expenditures in future will be largely in the direction of reducing operating costs and improving the quality of material. There is no standing still, for the requirements of the steel industry for new capital are always insistent.

GROWTH OF THE TIN PLATE INDUSTRY.

A subscriber writes as follows:

We have been much interested in reading the editorial in your issue of Oct. 27, headed "Tin Plate Growing Rapidly." The general impression given the average reader would be that there has been an abnormally large percentage of increase in the consumption of plate in the United States, whereas, while the production, of course, has shown a wonderful increase in the last twenty years the actual consumption of plate in the country cannot consistently be so reported. Take the period from 1899, as a starting paint, to 1909—1899 showed total consumption, taking the domestic production and the tonnage imported, of about 419,000 tons; in 1909 this had grown to 675,000 tons, or an increase of about 68 per cent in eleven years, making a net growth per average year of about 6.2 per cent.

Then take the period over the last five years—1905 showing total consumption of 560,000 tons, as against 1909 of 674,000 tons, or an increase of about 20 per cent, equal to 4 per cent per annum.

The last paragraph of the editorial states that the present mill capacity of the country is about 900,000 gross tons, which is approximately correct. You go on and say that it is not improbable that next year's demand will find pretty full employment for this capacity. Based on the percentages of increase, as shown above your statement can hardly be taken as a logical expectation, much as we manufacturers would like to see it. So far as we can see, the maximum consumption that we can hope for next year would be 700,000 tons, which will still leave a very large spread between the consumption and possible production on the mills. As it is now a number of the tin mills are making sheet products in an effort to take up their surplus capacity.

Our correspondent's comparisons of growth in tin plate consumption over a period of years are drawn from the table incorporated in the editorial upon which comment is made, the table being given so that the reader could make comparisons for himself. The editorial was headed "Tin Plate Industry Growing Rapidly," not "Tin Plate Industry Has Grown Rapidly" and what we wished to emphasize was its present rate of growth, domestic production growing from 514,775 tons in 1907 to 537,087 tons in 1908 and 612,951 tons in 1909. That represents very rapid rate of growth, and while it is true in 1906 production was 577,562 tons, the year was quite exceptional. The present rate of growth is still better shown by the operations of the tin mills this year, for there is every reason to believe that while 612,-

951 tons of tin and terne plates were made last year, this year there will be a gain of more than 100,000 tons or over 17 per cent. That is certainly a remarkable growth, considering the relatively slower rate which our correspondent points out occurred in the ten years from 1899 to 1909. Instead of adopting our correspondent's view: "So far as we can see the maximum consumption that we can hope for next year would be 700,000 tons," we insist that this year's production will be shown by the official statistics to have exceeded 700,000 tons, leaving room for a material increase next year.

FRIENDSHIP AND ABILITY.

Discussing the recent meeting of the American Iron and Steel Institute, the *Iron and Coal Trades Review*, of London, says in part:

The object is not to foster a definite international price agreement, but rather to encourage friendly rivalry instead of injurious competition. This is Judge Gary's way of putting it. American participation in the international steel trade is not very large at present, and the extent of the participation is probably pretty well governed by unwritten principles already, but through what the Institute accomplishes Judge Gary no doubt expects the participation to be increased. Again, there is the certainty that while the Payne-Aldrich Tariff Bill of 1909 materially reduced iron and steel duties, another revision is coming in the not distant future, and it is likely to make much more serious breaches in the tariff wall. It is not to be supposed that British manufacturers could make serious inroads in American domestic trade, in point of tonnage, for what would be a large tonnage to any of the European countries would be a relatively small tonnage to the Americans, but what a low-tariff or free-trade basis could easily bring about would be reduction in American exports through European manufacturers threatening disturbance to American domestic trade by occasional incursions. British or German manufacturers might not be able to export regularly and steadily to the United States, but by occasional sales they could break the best American market, and the price of their abstention would be the limiting of American exports to a certain figure. The lower the American tariff, the higher price, through limited exports, American manufacturers must pay in order to be let alone. Judge Gary wants to have the terms as liberal as possible, and one means is to advertise, through this new institute. American willingness to be friendly, and its ability to manufacture cheaply. Today we are more sure of Judge Gary's friendliness than of his ability to manufacture cheaply.

EQUIPMENT NEEDED

For Two Plants Building at Pontiac, Mich.

The Pontiac Motorcycle Co., Pontiac, Mich., recently organized with a capital of $600,000, is building and equipping a plant located on a 20-acre tract along the Grand Trunk railroad, where it will engage in the manufacture of motor cycles. It now has in course of construction three buildings: One, 45 x 208 feet; one, 55 x 100 feet, and one 55 x 128 feet. The plant will be equipped with an electric power system in motor-driven groups. It is in the market for the following equipment: Polishing and plating devices, oil-burning furnaces suitable for steel treatment, oil-brazing stands, Portland enameling ovens, and small up-to-date tool equipment suitable for this line of manufacture.

The Pontiac Drop Forge Co., an allied concern with the Pontiac Motorcycle Co., which was recently organized with a capitalization of $100,000, is also erecting a plant at Pontiac for the purpose of manufacturing small drop forgings. It is now constructing two buildings, one 65 x 110 feet, and the other 30 x 130 feet. It is in the market for the following equipment: Steam drop and helve hammers from 100 to 2,500 pounds; shears, trimming and stamping presses; oil-burning furnaces for forging and heat-treating blowers; hammers; oil tanks, and complete die shop equipment suitable for this class of manufacture.

The officers of the Motorcycle company are: President and general manager, Robert M. Brownson; secretary, James B. Book Jr.; treasurer, Harry L. Stanton; production manager, Max F. Wollering; purchasing agent, Richard E. Baus. The officers of the Drop Forging company are identical, with the exception that Mr. Wollering is vice president.

REGENERATORS ORDERED.

The Tennessee Coal, Iron & Railroad Co. has placed an order with the Rateau Steam Regenerator Co., 2 Rector street, New York City, for five Rateau regenerators adapted to regulate the exhaust of several mill engines including two large reversing engines. A complete low-pressure turbine plant has also been awarded to the Rateau company by the French Worsted Co., Woonsocket, R. I. This will include a Rateau-Smoot mixed flow turbo-alternator of 750 kilowatt capacity and a complete condensing equipment, pumps, motors, switchboard, etc. The alternator will be built by the Ball & Wood Co., of Elizabeth, N. J.

CRUCIBLE OFFICERS AND COMMITTEE.

The board of directors of the Crucible Steel Co. has re-organized with the election of the following executive committee and officers:

Executive committee—Herbert DuPuy, C. C. Ramsey, James H. Park, George E. Shaw, H. S. A. Stewart, John A. Sutton, H. D. W. English.

Officers—Herbert DuPuy, chairman executive committee; C. C. Ramsey, president; John A. Sutton, first vice president; O. H. Wharton, third vice president; G. W. Sargent, fourth vice president; Charles W. Rowlands, secretary; George A. Turville, treasurer.

The office of second vice president, formerly held by John A. Sutton, will not be filled for the present.

LABOR NOTES.

Machinists and blacksmiths employed by the Burlington railroad have been granted a wage increase of approximately 10 per cent and a nine-hour workday. The agreement affects about 2,000 men and covers the entire Burlington system.

Some metal spinners and machinists have joined the strike of metal polishers in New York City, who demand a closed shop, while ostensibly striking for higher wages and a uniform agreement. About a dozen outside shops have signed up, but none of the associated employers have done so, endeavoring to fill the places of strikers.

ELECTED NEW DIRECTOR.

Frank O. Wetmore was elected a director at the annual meeting of the Allis-Chalmers Co., succeeding William W. Allis, of Milwaukee. The other directors were re-elected. The officers will be chosen later.

Raising the Maine.—The final shipment by the Lackawanna Steel Co. of steel sheet piling for the cofferdam to be used in connection with the raising of the United States battleship Maine, in Havana harbor, will be made about the middle of November and will amount to about 3,500 tons. The contractors having in charge the raising of the Maine are proceeding rapidly with the arrangements for the work, and it is believed that the steel piling cofferdam will be in position some time in February.

BASING POINTS

Discussed by Vehicle Manufacturers

At St. Louis Convention—New Association Formed by Consolidation of Various Organizations—Dues Increased.

The National Association of Agricultural Implement and Vehicle Manufacturers, which met in St. Louis last week, merged with organizations representing manufacturers of plows, wagons, implements, harvesters and binders, a change in its name to that of the National Implement and Vehicle Association of the United States of America, elected a new president, selected Chicago as the meeting place of the newly-born association in 1911, considered quite a number of questions of national importance, and passed a resolution pronouncing the meeting the most successful one of its history.

One subject in which a great deal of interest was manifested, and upon which there was considerable discussion, was the present system of basing prices of finished products on Pittsburg quotations, plus the freight. It was contended that this was unfair to dealers in the middle west and other localities, and it was suggested that other basing points, such as Gary, be established. Varied views were expressed and no definite action was taken.

Dues Increased.

The maximum dues were increased from $50 to $750, so as to create a reserve fund and also a fund for the use of the legislative, traffic and other committees of the combined associations, which have heretofore been handicapped by lack of funds. The change in the rates of dues is so arranged as to fall comparatively heavily on the large concerns, but not to cause much increase in the assessments of the smaller companies.

The newly-elected president is Edwin D. Metcalf, of Auburn, N. Y., formerly chairman of the executive committee of the National Association of Agricultural Implement and Vehicle Manufacturers.

The organizations included in the merger are the National Plow Association, National Wagon Manufacturers' Association, National Vehicle Manufacturers' Association and the Cost Educational Association of America. The membership of the new association represents a combined capitalization of approximately $700,000,000, with an output of probably $900,000,000, giving employment to upwards of 300,000 workmen.

W. J. Evans, of Chicago, former secretary of the old organization, was chosen secretary and manager of the new one. The office of manager was especially created for him.

The executive committee of the new organization is composed of Frank C. Johnson, Springfield, O., chairman; C. S. Brantingham, of Rockford, Ill.; William Butterworth, Moline, Ill.; L. D. Collins, Batavia, New York, all elected for two years.

Vice presidents were elected as follows: W. A. Taylor, La Porte, Ind.; William Louden, Fairfield, Iowa; S. M. Nones, Louisville, Ky.; E. P. Curtis, Worcester, Mass.; B. T. Skinner, Battle Creek, Mich.; A. T. Stevens, St. Louis; Richard Graves, Dayton, O.; R. S. Buch, Elizabethtown, Pa.; J. S. Baker, Evansville, Wis.; Fred H. Bateman, Grenloch, N. J.; Judson Buchanan, Chattanooga, Tenn., and C. B. Demster, Beatrice, Neb.

Merchant Marine Indorsed.

A resolution pledging the support of the new organization to the Humphrey bill, now before congress, providing for a revival of the merchant marine service with no subsidies, was considered the most important one passed by the association.

Indorsement also was given to the recommendations of President Taft permitting the "creation and establishment of manufacturing corporations doing interstate commerce business to incorporate under act of congress." The plan is looked upon favorably by a majority of the large corporations of the country.

Congress will be importuned by the association, according to a resolution passed, to authorize the building for the United States of a series of up-to-date consular and embassy buildings and residences in foreign countries.

Another matter of importance indorsed by the association was the installation of safety devices in all large manufacturing plants as a means of protection to workmen. The subject was presented in a stereopticon lecture by Dr. William H. Tolman, Ph. D., director of the American Museum of Safety, New York City.

Criticism was made of the practice in vogue in Minnesota of manufacturing farm implements and vehicles by convict labor in the state prisons in competition with free labor.

The association decided to appoint 24 delegates to the seventh annual convention of the National Rivers and Harbors Congress, which will meet in St. Louis, Nov. 24-26.

Other resolutions passed by the National Implement and Vehicle Manufacturers' Association were: Approval of the work and co-operation of the Dealers' Federation and its efforts to reduce trade evils; opposition to the establishment of a retail house by manufacturers and jobbers of agricultural implements and vehicles; approval of the Cost Educational Association.

The Banquet.

From the hour the delegates began to arrive, Tuesday, Nov. 1, until the convention closed with a banquet at the Southern Hotel, Thursday evening, they were kept in a continual round of business and pleasure. Five hundred men and 100 ladies, a majority of whom were visitors, attended the banquet, Thursday evening.

H. M. Kinney, of Winona, Minn., was toastmaster, Rabbi Leon Harrison, O'Neill Ryan, former circuit judge of St. Louis, and Norman J. Colman, the father of the department of agriculture of the national government, were the speakers. Mr. Colman is 84 years old, and a resident of St. Louis, where he publishes *Colman's Rural World*, a journal devoted to farming interests. In his address, he attributed his long life and good health to the fact that he spent his early days on a farm. He said the manufacturers of agricultural implements had done more to promote agriculture than the farmers themselves.

Rabbi Harrison's subject was "The Morals of Trade." Judge Ryan spoke on "The United States, a World Power."

New York District—The American Sheet & Tin Plate Co. announces the removal of its sales office for the New York district to the thirteenth floor of the Hudson Terminal building, 30 Church street, New York City. Theodore A. Gessler is manager of sales of the New York district. The change became effective Nov. 7.

The city council of Oconomowoc, Wis., has received bids for waterworks extension and construction bonds. The money thus raised will be used in extending the lines.

OUR FOREIGN COMMERCE

Exports of Tonnage Lines Decreased, but Still Heavy--Export Values Show Up Well--Imports Decreased--Iron Ore Imports Still Very Heavy

September showed a sharp drop in iron and steel exports, the month furnishing the smallest total of the year, excepting January, and passing January by only 85 tons. The September total of all the tonnage lines reported was 118,737 gross tons, this being 12,323 tons less than August and 4,169 tons less than the average of the eight months preceding September.

The September total was large nevertheless, suffering only by comparison with the preceding seven months, for it easily exceeded the average in any preceding year, being at the rate of 1,425,000 tons a year, when no previous year has shown above 1,325,000 tons. A continuance of the September rate during the succeeding three months would bring out a total of 1,458,000 tons for the year.

IRON AND STEEL EXPORTS, GROSS TONS.

	September,		Nine months, ending September,	
	1909.	1910.	1909.	1910.
Scrap	1,437	1,915	23,487	16,867
Pig iron	2,862	12,997	40,837	83,862
Billets, sheet bars, etc.	10,475	4,480	94,594	14,162
Wire rods	1,230	1,044	10,671	16,897
Rails	23,478	20,538	189,784	263,782
Structural iron and steel	7,473	10,333	68,433	114,552
Bar iron	784	1,621	9,721	14,928
Steel bars	6,651	10,398	51,373	78,934
Sheets and plates	17,090	24,493	124,826	204,056
Tin plates	610	808	6,825	8,395
Barb wire	4,233	5,953	49,148	54,635
All other wire	3,743	6,802	60,046	67,750
Wire nails and spikes	2,185	2,597	21,124	32,248
Cut nails and spikes	772	662	6,880	5,370
All other, including tacks	538	1,136	5,837	7,408
Pipes and fittings	13,831	12,960	112,955	118,101
Totals	97,392	118,737	876,541	1,101,982

Comparing the September exports with the average exports in the preceding eight months of the year it may be noted that the main decrease was in rails, which amounted in September to only 20,538 tons, against an average of 30,400 tons a month in the preceding eight months. Had there been no decrease in rails, September would have shown 6,000 tons more than the average of the preceding eight months. The only other drop worth mentioning was in structural material, the 10,333 tons in September being 2,700 tons less than the average in the preceding eight months. A few considerable gains were shown, such as 4,000 tons in pig iron, 3,200 tons in billets, etc., 2,000 tons each in steel bars and plates and sheets and 1,100 tons in wire nails.

IRON AND STEEL IMPORTS, GROSS TONS.

	September,		Nine months, ending September,	
	1909.	1910.	1909.	1910.
Scrap	9,886	3,186	14,263	65,457
Pig iron	12,601	16,068	99,823	176,015
Billets, bars and steel, n. e. s.	1,434	3,919	11,853	36,026
Wire rods	941	1,256	8,548	15,779
Bar iron	1,718	2,508	11,602	31,212
Sheets and plates	402	704	2,057	5,465
Tin plates	4,346	2,719	44,388	53,801
Totals	31,358	30,960	193,194	384,355

While the tonnage exports in September showed a decrease from the average of preceding months, the value of all iron and steel exports, including the tonnage lines as well as hardware, machinery, etc., made a good showing, as the total value was $16,776,178, or about $500,000 in excess of the average in the preceding eight months. The relatively better showing in value than in tonnage was due in large part to the difference in distribution of the tonnage, as the loss in tonnage in rails, a relatively low-priced line, was much greater than the total net loss in all tonnage lines. Certain lines of machinery showed a material gain. Metal-working machinery in September was exported to the extent of $639,755, or $60,000 more than the average in the eight preceding months, while sewing machines, with $767,683 in September, showed a gain of $110,000.

Crude Steel Exports Small.

It is important to observe that while our iron and steel exports are running heavier than ever before in our history, our exports of the cruder materials are as a rule less, while the more highly finished forms are being exported in much greater volume. In the following there are shown our exports of crude steel, including ingots, blooms, billets, sheet bars, etc.:

	Gross tons.
1902	2,409
1903	5,445
1904	314,324
1905	237,738
1906	192 616
1907	79,991
1908	112,177
1909	104 862
January, 1910	3 080
February	5,167
March	266
April	168
May	180
June	2,241
July	126
August	2,025
September	4,480
Nine months, 1910	14,162

Thus it will be seen that our crude steel exports have been very small this year compared with previous records, there being less than 15,000 tons in the past nine months, while in 1904 such exports averaged 25,000 tons a month, and in 1905 20,000 tons a month.

Decreased Imports.

The following table shows our imports of scrap, pig iron and various forms of rolled iron and steel, by calendar years and by months this year, in gross tons:

1905	416,000
1906	577,809
1907	662,358
1908	205,845

EXPORTS OF TONNAGE LINES—GROSS TONS.

	1907.	1908.	1909.	1910.
January	102,630	74,353	70 089	118,652
February	87,912	81,773	84,860	110,224
March	112,787	96,681	94 522	124.980
April	132.790	93,285	100,904	117,921
May	91,543	64,041	109 977	135,306
June	92,996	69,770	114,724	120,601
July	122,240	86,796	100,680	128,060
August	118,792	86,244	105,694	131,060
September	114,819	76.732	97 392	118,737
October	123,170	85,766	110 821	.....
November	116,309	71,130	115,943	.....
December	86,019	77,659	137,688	.....
Totals	1,301,979	964 242	1,243,467	1,101,982

VALUE OF IRON AND STEEL EXPORTS—TONNAGE AND NON-TONNAGE.

	1907.	1908.	1909.	1910.
January	$ 14,327,926	$ 13,468,058	$ 10,329,383	$ 14,513,394
February	13,946.842	14,063,559	10,947.159	13,949 032
March	16.419.116	15,168,155	13,874.461	17,258,503
April	17,684.863	15,455,319	13,058.054	16,529,254
May	14,594,043	11,281,415	12,993.197	17,658 042
June	17,226.259	11,677.944	13,779 736	16,503 204
July	17.614.017	12,083,951	11,866.772	16,108,102
August	17,587,181	12,058,561	14,136 219	17,628,538
September	16,830,160	11,221,799	12,966.908	16,776,178
October	18,786,750	11,505 063	14,249,598	.....
November	17,051.755	10,895,549	14,434,690	.....
December	14,997,869	12,231,741	15,075,183	.....
Totals	$197,066,781	$151,113,114	$157,680,331	$146,924,302

1909	362,501
January, 1910	58,309
February	44,519
March	57,157
April	51,439
May	45,024
June	31,010
July	42,527
August	36,879
September	30,960
Nine months, 1910	384,355

The decrease in recent months, as compared with the fore part of the year, is due chiefly to a decreased movement in scrap and pig iron, the latter designation including ferro-silicon, ferro-manganese, spiegeleisen, etc. Scrap imports in September amounted to 3,186 tons, against an average of 9,559 tons in the first six months of the year. pig iron being 16,668 tons against 20,000 tons.

Iron Ore Imports Heavy.

September imports of iron ore amounted to 208,892 gross tons, or 15,000 tons less than the average of the preceding eight months, but still far ahead of the average of any preceding year. The imports in the first eight months of this year, 1,791,025 tons, exceeded the imports in any full calendar year preceding, and September adds to this lead. Imports in detail are shown below:

IRON ORE IMPORTS, CALENDAR YEARS GROSS TONS.

1903	980,440
1904	487,613
1905	845,651
1906	1,060,390
1907	1,229,168
1908	776,898
1909	1,696,411

	1909.	1910.
January	105,233	284,823
February	61,749	170,427
March	108,676	163,633
April	74,782	206,135
May	97,393	240,833
June	124,714	193,415
July	172,316	248,810
August	209,855	282,949
September	164,613	208,892
October	179,505	.....
November	174,976	.....
December	222,609	.....
Totals	1,696,411	1,999,917

The sources from which ore imports have been drawn are shown below:

	September.	Nine months.
Spain	32,499	395,362
Sweden	11,913	172,840
Canada	11,692	120,311
Cuba	118,650	1,114,710
Other countries	34,138	196,694
Totals	208,892	1,999,917

E. W. Dodge, general manager of the Norton Co., Worcester, Mass., will deliver an illustrated lecture on "Grinding Wheels, Grinding Machinery and Grinding," at the regular monthly meeting of the Engineer's Society of Pennsylvania, at Harrisburg, Nov. 14. At this meeting the nominating committee will present names of candidates for offices to be elected at the regular December meeting.

SUPERIOR MILLS MERGE

With Steel Co. of Canada, Which Will Complete Project.

Toronto, Nov. 7.

The Superior Rolling Mills Co., of Fort William, Ont., recently organized to establish a plant at that city, has been merged with the Steel Co. of Canada, which undertakes to carry out the project under a modified agreement with the city. The new conditions bind the company to begin construction next spring and to start manufacturing 18 months later. The 10-acre site of the company was exempted from taxation for a term of years, and by the new agreement this exemption will be extended to an additional 15 acres, should the company require such extension. The company agrees to handle its western trade from the Fort William plant. J. Orr Callaghan, of the Steel Co., states that plans are in preparation for the plant on a considerably larger scale than that contemplated by the Superior Rolling Mills Co.

NEW MEETING PLACE FOR IRON AND STEEL INSTITUTE.

Birmingham, Eng., Oct. 31.

Many American engineers and ironmasters will be interested in the foundation stone laying of the new home for the Institution of Civil Engineers at Westminster. For many years past, the meetings of the Iron and Steel Institute were held in the old building recently demolished and at the May meeting mention was made of the fact that the visitors were on that occasion taking the last farewell of the buildings. The new building will occupy a site a few yards further along in the direction of the Green Park and almost close to Storey's Gate, close to the building of the mechanical engineers. The new structure will be on a far more ambitious scale than the old. It will be twice as large in area, and will include a commodious meeting hall for examinations and conferences. Some of the internal and external decorations will be used for the new building, notably the busts of Rennie, Smeaton, Stephenson and other famous engineers. At the foundation stone laying ceremony, mention was made that the Institution had been associated with Great George Street during practically the whole of its career. During the last 14 years, there has been a rapid growth, so that the present total membership is about 9,000, of whom many are practicing in foreign countries and the colonies. It is probable that the new building will be available for the Iron and Steel Institute meeting in the spring of next year.

PLANS TO BUILD ALTERNATE FURNACE.

The statement is made that the Zenith Furnace Co., Duluth, has decided to build another blast furnace, that will be blown alternately with the stack now operating. It is proposed that the new stack will have a capacity of 250 tons of pig iron daily, 50 tons more than the present stack. Plans are now being drawn, to be completed by Jan. 1, and construction will begin early in the spring. Capt. A. B. Wolvin, of Duluth, is president of the Zenith company.

REMOVING RACKS.

The Pennsylvania Railroad Co. has sent over 1,000 coke cars to the Pitcairn, Pa., shops during the past week to be stripped of their coke racks. The cars will be used in handling the coal traffic. The Baltimore & Ohio and the Pittsburg & Lake Erie railroads have also removed racks from a large number of coke cars. The new self-cleaning steel cars are being retained in the coke trade. The shortage of freight cars in Pittsburg is more acute than any time this year.

RAPID UNLOADING.

Some extremely favorable records of rapid unloading have recently been made at the Marquette, Mich., docks of the Lake Superior & Ispheming railroad, with the new type of all-steel ore car, designed by the Pressed Steel Car Co., a description of which has appeared in THE IRON TRADE REVIEW. The official report, covering the service performed by this car, is as follows:

			Time in seconds.			Total time.			
	Grade of ore.	Tons.	Opening.	Cleaning.	Closing.	Min.	Sec.	No. of men.	Character of ore.
Oct. 15	Cambridge	40	20		40	1	0	3	Bad.
Oct. 18	Negaunee	43	20	10	28		58	5	Bad.
Oct. 19	Lump	47	20	10	30	1	0	3	Good.
Oct. 19	Rolling mill	44	20	0	35		55	3	Good.

The Cambridge ore shown is the hardest grade of all to handle.

The plant of the Acme Brass Foundry Co., Woodland avenue S. E., Cleveland, of which Abram Berstick is proprietor, was badly damaged by fire Nov. 6, the loss being estimated at $3,000.

NEW YORK SUBWAY

Bids Close to Estimates—Lowest Proposals About $85,000,000.

Complete tabulation of the contractors' bids submitted on the three divisions of the proposed tri-borough subway extensions in Greater New York, has been made by the public service commission, and shows that the total of the lowest bids on the 21 sections embraced amount to $85,437,570, which is about $3,500,000 more than the estimates of the engineers. The total of the lowest bids on the Lexington avenue, Brooklyn, division, is $59,746,656.59; that on the Broadway-Lafayette, $11,924,359.12; and on the Canal street division, $13,766,544.40. The Bradley Contracting Co., which is now doing much subway work for the city, will apparently get the major part of the awards, as that company is the lowest bidder on 10 sections. The Metropolitan Contracting Co. is low on two sections, and McArthur Brothers Co. on one section outright and one section on alternate form.

The section on which alternate bids were invited is that under the Harlem river, the invitations calling for a tunnel of cast iron pipe or one of steel rings. Arthur McMullen estimated $4,823,513 as the cost of a steel ring tube, while McArthur Bros., the lowest bidder on the pipe tunnel, submitted an estimate of $5,748,608 for the sub-river section.

As soon as the commission's engineers are through with the final examinations of the figures to see whether the competing contractors have sought to take improper advantage of the city, a commission will proceed at once to perform its part in making the awards. The matter will then go to the board of estimate for the approval of the awards to appropriate the funds and to authorize the bids. The cost of the new subways, as represented by the contractors' figures, does not include the ballasting, track laying and finishing of stations, nor that of the real estate required for stations, the cost of which has been variously estimated at amounts running up to $20,000,000.

WILL BUY EQUIPMENT IN FEW MONTHS.

The Wetmore Adding Machine Co., Milwaukee, Wis., whose incorporation was recently noted, reports that it expects to rent a factory of size sufficient for turning out 1,000 machines a year. The equipment, orders for which will not be placed before several months, will consist principally of the following machinery and other apparatus: Lathes, shapers, grinders, milling machines, punch presses, drilling machines, turret lathes, screw machines, motors, shafting, hangers, pulleys, etc. The company has not yet decided in what city it will locate.

GRONDAL PLANT

Will be Installed by Moose Mountain Mining Co.

Toronto, Nov. 7.

The Moose Mountain Mining Co. is arranging for the erection on its property at Sellwood, Ont., of a new concentrating plant which will largely increase its output. The present method of concentrating the ore is by magnetic separation, a dry process. The existing equipment will be supplemented by the installation of a Grondal plant, the process of which consists in the crushing of the iron ore, and passing it through a 100-mesh sieve and then washing over an artificial dam where revolving magnets collect the iron particles. The iron is then briquetted and stacked for shipment. The company expects to refine 800 to 1,000 tons daily through the winter by the Grondal process and to have 100,000 tons of iron stacked before spring. The electric system used to operate the present machinery will be extended to the Grondal plant.

FOREIGN RAIL TRADE.

There is very little business moving in the rail trade, and of the inquiries before makers the only one which has been settled this week is that for 4,000 tons of 90's for the Great Northern of Ireland, which has been placed with the Barrow Hematite Co. Decisions will shortly be taken regarding a number of orders of from 2,000 to 8,000 tons, but meantime matters remain in abeyance. The only new inquiry which has come upon the market is one for 1,500 tons of 50's for the Londonderry, Lough Swilley & Letterkenny railway.—The Ironmonger.

WELSH TIN PLATE TRADE.

The Swansea harbor trust returns on tin plate for the week ending Oct. 22, with comparisons, follow:

	Week of Oct. 22. Boxes.	Previous week. Boxes.	Corresponding week last year. Boxes.
Received	93,689	103,137	90,870
Shipped	97,251	62,320	117,943
Stocks	197,828	201,390	.....

LARGEST VESSEL

Ever Lost on the Lakes—Moreland Broken Into Three Parts.

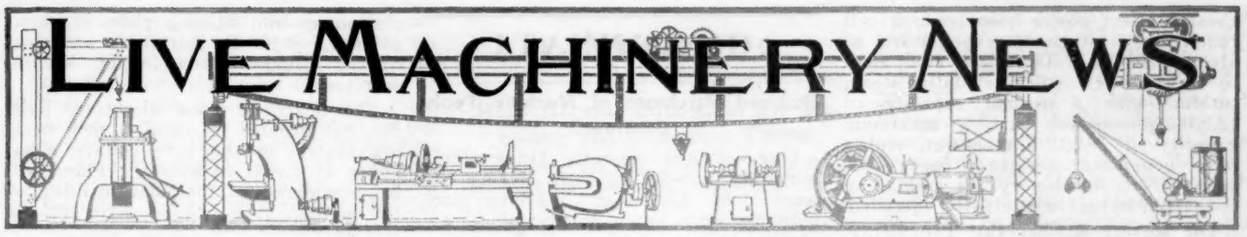
The steamer W. C. Moreland, owned by the Jones & Laughlin Steel Co., of Pittsburg, and managed by W. H. Becker, of Cleveland, has been abandoned to the underwriters as a constructive loss. The Moreland went on the rocks at Eagle river, Lake Superior, Oct. 18, with a cargo of 10,700 tons of ore. During the 14 days which had elapsed since then, the wreckers had been able to work only four days, owing to the heavy weather prevailing. Meanwhile the steamer has been pounded badly. Information from W. H. Hill, chief engineer of the fleet, indicates that the Moreland has broken into three parts of nearly equal length. She is drawing 24 feet aft, 15 feet at No. 4 hatch, 28 feet at No. 12 hatch and 19 feet at the bow. The breaks in the hull which extend below the tank top are at Nos. 12 and 24 hatches. To recover the steamer it will be necessary to bulkhead both sides of each break, which means four bulkheads. She is lying in a most exposed position and a big storm would probably destroy her completely. According to the report, the after hold, with machinery and boilers, is about all that is now worth saving. Whatever is done to save the remains of the steamer will have to be done promptly. The underwriters will probably ask for bids from the wrecking companies for floating the wreck and delivering it at Superior on the no-cure-no-pay plan.

The Moreland was one of the finest freighters on the lakes. She was built at the Lorain yard of the American Ship Building Co., and came out only two months ago. She is the largest vessel that was ever lost on the lakes and the first 600-footer to meet with misfortune. Altogether the loss of the Moreland will cost the insurance companies $500,000.

Construction of No. 1 stack of the Tennessee Coal, Iron & Railroad Co., at Ensley, Ala., is making steady progress. The last ring of the shell was recently placed and the skip hoist is under construction. The stack will be water cooled, the first blast furnace in the south to adopt the thin lining style.

The Alliance Mfg. Co., of Streator, Ill., manufacturer of farm implements and wagons, is considering locating a plant in Toledo, O.

LIVE MACHINERY NEWS



CHICAGO

Power Plant Equipment in Demand.—Machine Tool Trade Quiet.

Power plant, power transmission and warehouse machinery are moving in a satisfactory manner. The machine tool trade remains comparatively quiet, although there are indications of an early and permanent improvement. It is notable that all classes of light machinery are in better demand than heavy products. This fact has been recognized by a number of large manufacturers in this territory, such as the Allis-Chalmers Co., and these corporations have made extensive changes in their works during the past year in order to adapt them to the economical production of light machinery. The result has been that the purchaser, at present, has an unusually large assortment of small tools, specialties and devices from which he may select.

Marshall Field & Co., Chicago, are about to erect a large warehouse at Fifth avenue and Polk street. Details regarding the size of the building are not available except that it will be large and will require 1,600 tons of structural steel. The warehouse will also be fitted with modern electric freight elevators, an automatic sprinkler system and possibly with a private light and power plant. Figures on the steel work are now being taken.

The city commissioner, Ft. Worth, Tex., has ratified the purchase by J. R. Nutt, Cleveland, O., of the electric franchise and other holdings, of the Ft. Worth Light & Power Co., and the electric properties of the Ft. Worth Gas Co. The contract by which he acquired these properties, also provides for the immediate construction of a central hydro-electric plant with a capacity of 2,000 horsepower, and other improvements to cost $2,000,000.

Bids are being received by the board of public works, Grand Rapids, Mich., Samuel A. Freshney, secretary, for chain grate stokers to be fitted to the boilers of the combination light and pumping station owned by the city of Grand Rapids and also for two arc lamp generators direct-connected to a motor. An alternative proposition will be received for six 50-light, series mercury rectifier systems, instead of the generators.

A contract for building an addition to the Gogebic Steam Boiler Works, on Lake avenue, Duluth, Minn., has been let to George H. Lounsberry for $20,000. The building is to be 40 x 88 feet, and will be on the north side of the present building. The Lounsberry contract includes the construction of the building only.

The Pacific Coast Condensed Milk Co., with general offices at Seattle, Wash., has decided to enter the middle west territory and expects to build ten condensing plants in the Mississippi valley, principally in Wisconsin. The ten plants will cost about $1,500,000. One of the plants will be located at New Richmond, Wis., and another at Sheboygan Falls, Wis.

The Winnipeg, Salina & Gulf Railway Co., Salina, Kans., intends to construct an electric railway from Omaha, Neb., to Salina, Sterling and Pratt, Kans. Branch lines will be run from Salina to Kansas City, Mo., and to Belleville, Kans. The W. K. Palmer Co., engineers, 717 Dwight building, Kansas City, Mo., has charge of all the engineering work.

Bids will be received in the near future by the board of fire and water commissioners, Kansas City, Mo., E. B. Harrington, sec., for furnishing, f. o. b. cars at the Turkey Creek station, Kansas City, a 36-inch by 24-foot all geared head, motor driven engine lathe and also a 20-inch by 18-foot and a 16-inch by 12-foot lathe, similarly equipped.

The city of Kamrar, Ia., is building a small water pumping plant with a capacity of 25,000 gallons per day. The plant will be steam-driven and the new work includes a stand pipe. The total estimated cost of the installation is $5,000. W. D. Torrence, city clerk, Kamrar, Ia., has the matter in charge.

Bids will be received by B. G. Mullaney, commissioner of public works, Chicago, for furnishing, f. o. b. cars at the waterworks shops, 2304 South Ashland avenue, Chicago, one 18-inch and one 20-inch, double back geared engine lathe with quick change gear attachment.

The Indianapolis Gas Co., Indianapolis, Ind., has taken out a permit for the installation of two new boilers equipped with automatic stokers at the Lawndale avenue plant. The company also contemplates equipping all of its old boilers with automatic stokers.

The Gosport Electric Co., Gosport, Ind., is contemplating the erection and installation of an electric light and power plant and it is reported that bids will be received in the near future. C. K. Kiefer is president, and Charles Abraham is secretary.

The Interstate Chemical Co., Galveston, Tex., C. A. Weatherington, general manager, advises that it is in the market for a compressed air starting device for 25-horsepower gasoline engines.

The village of Starbuck, Minn., is receiving prices on a 50 or 55-horsepower standard Corliss engine, together with a 75-horsepower tubular boiler for the municipal light and power plant.

NEW YORK

Machine Tool Trade Shows Little Improvement.

The machinery trade in New York has felt the attitude of hesitancy on the part of buyers that is usual during the period immediately preceding elections, and few orders of consequence have been booked. Some railroad and industrial corporation placings have come to the local market, but these were in small lots and single machine orders and probably aggregate the smallest total of business taken since the mid-summer dullness. The general opinion of sellers of all kinds of machinery is that buying will be renewed in normal volume following the elections, and that from then on improvement will be steady. The Pennsylvania Railroad Co. closed for a few machine tools and the New York Central purchased some equipment for the Grand Central station. No definite closing has been done by the latter company, however, on any part of the extension list put out several months ago. It is not improbable that final action will be announced on this business by Nov. 15. Recently reported buying of machine tools by the Delaware, Lackawanna & Western railroad, has been denied by the company. A number of machines included in the list put out last spring were cut out when final action was taken on the bids and announcement made that the list was closed. The trade is anticipating an early, and large inquiry for the equipment for the Pennsylvania General Electric Co.'s plant now under construction at Erie, Pa. Sellers of cranes have taken orders on a fair amount of business recently and indications point to a continuation of the satisfactory volume builders of this line of machinery have enjoyed during the year. Manufacturers of pneumatic tools, report a better volume of business during last week, and feel that the improvement will continue.

The Augustine Automatic Rotary Engine Co., Buffalo, is having plans prepared for extensive additions to its plant on Elmwood avenue. A power house, 50 x 50 feet, 2 stories and a factory addition, 35 x 100 feet, 3 stories, will be erected at once. In the near future two factory buildings, 35 x 350 feet, 3 stories and 35 x 250 feet, 3 stories, respectively, will be added. The buildings will be constructed of brick and reinforced concrete, and are estimated to cost $100,000. G. Morton Wolfe, Ellicott Square building is preparing the plans.

The Rhode Island Co., Providence, R. I., has plans prepared for practically doubling the capacity of its Man-

chester street power house, which will require an estimated expenditure of about $300,000. The new equipment to be installed will include a steam turbine with a normal capacity of 13,500 horsepower and a maximum capacity of 20,000 horsepower, and a new generator designed for 11,000 volts. New machinery for unloading coal from barges will also be installed.

The Revere Rubber Co., Providence, R. I., a subsidiary of the United States Rubber Co., has secured permits to erect the following buildings on Eagle street, Providence. A 4-story storehouse 50 x 164 feet; one-story boiler and pumping house, 56 x 54 feet; one-story manufacturing building, 60 x 164 feet, and a machine shop, part one-story and part 2-stories, 50 x 153 feet. Cruise & Smiley, Providence, are the contractors.

Thos. Alton of New York and associates have purchased the plant of the Allentown Foundry & Machine Co., Allentown, Pa., from Col. Henry C. Trexler and others and will use part of it as a works for braiding insulated wires with patented machinery. The remainder of the plant will be utilized by the A. M. Stocke Co., of New York, a general jobbing foundry.

Williams & Shock, 223 North Calvert street, Baltimore, are in the market for a 100-kilowatt, 110-volt, direct-connected, second-hand, generating unit, boiler pressure to be 80 to 100 pounds. The Hardie-Tynes Mfg. Co., Birmingham, Ala., wants prices on a heavy, double-geared, hollow-spindle, engine lathe, 30-inch swing and six feet bed.

The Wasson Piston Ring Co., Bayonne, N. J., has been incorporated with $38,000 capital. Foster Crampton, Robert B. Wasson and Herbert T. E. Beardsley are the incorporators. It is understood the company will equip a plant for the manufacture of motors, piston rings and piston packing.

The Commercial Iron Works, Penn Yan, N. Y., has been reorganized recently and incorporated with a capital of $30,000. The company will rebuild the plant which was destroyed some time ago by fire. W. M. Patterson, W. N. Wise and William T. Morris are the directors.

The commissioner of the District of Columbia will receive bids until Nov. 12, for the furnishing and erecting of a complete electric lighting plant for the temporary buildings of the work house located at Occoquan, Fairfax county, Va.

Proposals will be received at the office of the general purchasing officer, Isthmian canal commission, Washington, D. C., until Nov. 11, for motor generator sets and appurtenances, lathe, milling machine and manganese steel castings.

The board of public works, Spokane, Wash., has engaged W. E. Moore, hydro-electric engineer, as consulting engineer for the installation of a municipal electric light plant.

The Mutton Hollow Fire Brick Co., Woodbridge, N. J., is considering increasing the capacity of its power plant for which a new engine will be required.

CINCINNATI

Railroad Purchases of Machine Tools Continue.

One of the eastern trunk lines bought a number of tools during the week and Cincinnati machine tool builders were again successful in securing a fair portion of the order. Aside from this particular transaction, the week's developments show no material change, and conditions generally continue on the same basis that has existed for the past three or four months. The peculiar feature of the situation is that orders continue to come forward in a more or less desultory fashion, yet up to this time they have been sufficient to insure normal operating conditions. With the completion of the government dam at Fern Bank, about 10 miles west, the city will enter on a new era of prosperity, so far at least as water transportation facilities is concerned. While the railroads deliver large quantities of coal for manufacturing purposes, the city has relied almost absolutely on river shipments for most of its resources of this kind. The dam, when in commission will permit a 9-foot stage of water at all times, so that these shipments will not be contingent upon the actual stage of the river.

Since the appointment of W. B. Mellish as receiver of the Steel Castings Co., several years since, it is said that he has been unable to secure a bid on the plant, as a whole, that was advantageous. The recent advertising for bids did not uncover a single bidder for the property, although two representatives of companies were expected to enter bids. It is quite likely that the receiver will ask permission to dismantle the plant and sell the machinery at private sale and advertise for bids on the buildings. This plant is located at Winton Place, one of the outlying suburbs, and several years ago gave promise of being one of the prosperous enterprises of the city.

BUFFALO

No Improvement in the Machine Tool Trade.

Business in machinery has been very dull during the past week, and there are no immediate signs of improvement, though more interest is looked for soon after elections. The demand for tools of all kinds has been unusually light, and the business in electric equipment, which has continued good on the whole, is not as great as usual.

The Larkin Co., 680 Seneca street, will soon be in the market for a steam heating plant, power plant and general equipment for a new building now in course of construction. The building is to be eight stories, 100 x 250 feet. A complete steam heating plant will be required as well as a 2,000-horsepower electric power plant including a number of alternating current motors of from five to 50 horsepower each, transformers, switchboards, etc. Niagara Falls power will be used. The company will be ready for figures on the power and heating plant in about a week. John D. Larkin is president of the company and D. D. Martin, secretary.

The board of poor directors, Erie, Pa., has decided to install a new heating system in the Erie county almshouse at a cost of $10,000. Plans will be considered at the next meeting of the board. J. E. Leslie, Erie, Pa., is secretary.

WASHINGTON

Government Awards and Other News.

During the past week, the general purchasing officer, Isthmian Canal Commission, Washington, made the following awards: 6,000 feet plow-steel cable, under circular 608, to the United States Steel Products Export Co., New York, at $828; pipe taps, hobbs, etc., under circular 608, class 5, to Fox Bros. & Co., New York, at $254.57; steel reinforcing bars, under circular 609, to J. B. Kendall Co., Washington, at $24,523.89; 200 guides, truck bolster, for 12-yard dump-cars, under circular 610A, to the Detroit Steel Casting Co., New York, at $938.70; flat and spiral punches, under circular 610A, to the Cleveland Steel Tool Co., Cleveland, at $111.75; one portable testing wattmeter, under circular 610A, to the General Electric Co., Schenectady, N. Y., at $63; punches, under circular 608, class 7, to the Cleveland Steel Tool Co., Cleveland, at $177.54.

Naval awards were made during the past week as follows: Under schedule 2522, class 71, Mare Island, four non-reversible pneumatic drilling machines, to the Ingersoll-Rand Co., New York, at $36; class 72, Portsmouth, New York, Charlestown and Mare Island, 67 non-reversible pneumatic drilling machines, to the Ingersoll-Rand Co., New York, at $48; class 73, Portsmouth, New York, Philadelphia, Norfolk, Charlestown and Mare Island, 106 non-reversible pneumatic drilling machines, to the Ingersoll-Rand Co., New York, at $60; class 74, Philadelphia, Norfolk and Mare Island, 51 non-reversible pneumatic drilling machines, to the Ingersoll-Rand Co., New York, at $48; class 75, Portsmouth, New York, Philadelphia, Norfolk, Charlestown and Mare Island, 69 non-reversible pneumatic drilling machines, to the Ingersoll-Rand Co., New York, at $60; class 76, New York and Mare Island, 29 non-reversible pneumatic drilling machines to the Ingersoll-Rand Co., New York, at $64; class 77, Brooklyn, three non-reversible pneumatic drilling machines, to the Ingersoll-Rand Co., New York, at $76; class 78, Charlestown, six reversible pneumatic drilling machines to the Standard Railway Equipment Co., East St. Louis, Ill., at $38.39; class 79, Portsmouth, two pneumatic drilling machines to the Standard Railway Equipment Co., at $7.40; class 80, Mare Island, five pneumatic drilling machines to the Standard Railway Equipment Co., at $71.40; class 81, Portsmouth, two pneumatic drilling machines, to the Standard Railway Equipment Co., at $75.64; class 82, New York, Norfolk and Puget Sound, 22 pneumatic drill-

ing machines, to the Standard Railway Equipment Co., at $75.64; class 83, Philadelphia, three reversible drills, to the Ingersoll-Rand Co., New York, at $68; class 84, Charlestown and Mare Island, seven pneumatic wood boring machines, to the Ingersoll-Rand Co., at $57.60 and $60; class 85, Charlestown, four pneumatic wood boring machines, to the Ingersoll-Rand Co., at $60; class 89, Philadelphia and Charlestown, 12 pneumatic hammers, to the Dayton Pneumatic Tool Co., Dayton, O., at $26.50; class 90, Philadelphia, Mare Island and Charlestown, 22 pneumatic hammers, to the Dayton Pneumatic Tool Co., at $28.50; class 91, Charlestown, 12 pneumatic scaling hammers, to the Ingersoll-Rand Co., at $17; class 92, Charlestown, six pneumatic hammers, to the Dayton Pneumatic Tool Co., at $30; class 93, Mare Island, four jamb riveters, to the Chicago Pneumatic Tool Co., New York, at $150; class 94, to the Chicago Pneumatic Tool Co., at $175; class 95, Charlestown, four yoke riveters, to the Chicago Pneumatic Tool Co., at $125; class 96, Charlestown, four yoke riveters, to the Chicago Pneumatic Tool Co., at $175; class 97, Charlestown, four yoke riveters to the Chicago Pneumatic Tool Co., at $200; class 98, Charlestown, four side riveters, to the Chicago Pneumatic Tool Co., at $150; class 99, Charlestown, four bottom riveters, to the Chicago Pneumatic Tool Co., at $150; class 100, Mare Island, one pneumatic hoist, to the Detroit Hoist & Machine Co., Detroit, at $245; class 101, Mare Island, one pneumatic hoist, to the Weir & Craig Mfg. Co., Chicago, at $172; class 102, Mare Island, one pneumatic hoist, to the Weir & Craig Mfg. Co., at $245. Other naval awards were the following: Under schedule 2888, Washington, one No. 2 universal milling machine complete, to the Brown & Sharpe Mfg. Co., Providence, R. I., at $944.25; schedule 2930, Charlestown, one motor-driven engine lathe, to the Hendey Machine Co., Torrington, Conn., at $1,083; schedule 2939, class 134, to the Central Metal & Supply Co., Philadelphia, at $32,836.70; schedule 2974, Newport, 25 steel forgings, to the Midvale Steel Co., Philadelphia, at $1,106.25; schedule 2980, Boston and Norfolk, 99,000 pounds anchors, to the American Steel Foundries Co., Chester, Pa., at 5.8 cents.

The Jackson Church Co., Saginaw, Mich., is arranging for the erection of a new plant at Saginaw. This is to consist of pattern shops, foundry, machine shop, finishing shop, and several other buildings, including a separate power house. The plant will be equipped for electric motor drive throughout.

J. Richard Kemmer, consulting engineer, House block, Pittsburg, has completed plans for a water supply system, with a daily capacity of 750,000 gallons, for Lowellville, O., the supply to be drawn from 90-foot artesian wells, at an elevation of 250 feet above the level of the city.

Charles E. L. B. Davis, brigadier-general, U. S. A., 725 Chronicle building, San Francisco, will receive bids until Nov. 28. for furnishing and installing electrical machinery on drawbridges across Tidal canal, Oakland Harbor.

PITTSBURG

More Hopeful Outlook in the Machinery and Equipment Trades.

Inquiries for all kinds of equipment received by the local machinery trade during the first week in November have given the local market a much firmer tone and makers are more optimistic than at any time during the past several months regarding the outlook for the first half of next year. Comparatively little new business is being booked, but most of the plants in this district continue to operate on a fairly satisfactory basis. Shipments during October were heavier than for the preceding month. All of the Westinghouse companies are operating full time, on account of the heavy bookings for electrical equipment since July 1, and builders of heavy rolling mill equipment are busy. Demand for castings is rather light, although some companies are assured steady operation for some time. There is a fairly good demand for light equipment for factories and small industry plants and builders of cranes report fairly heavy inquiry. Transportation companies are buying more freely, although all orders are being placed quietly and little publicity is given these contracts. Because of the shortage of freight cars that has developed in some parts of this district, railroad repair shops are working full time and some fairly large orders for shop equipment and tools have been placed.

Contracts have been awarded by the Clinchfield Coal Co., Dante, Va., for two 1,500-horsepower turbines and ten 500-horsepower motor generators with switchboards; also equipment for four sub-stations for the handling of power at four local plants on the company's property. All of this machinery will be built by the Westinghouse Machine Co., and the Westinghouse Electric & Mfg. Co. The plant will have a power line which will transmit the current to four sub-stations. The sub-stations will have transformers and motors of sufficient capacity for the power requirements of the individual mines and tipples. It is stated that the outfit will be one of the largest central plants in the country and will be one of the few complete electric plants used in coal mining.

The Bessemer Gas Engine Co., Grove City, Pa., which has been operating its plant double turn for the last 14 months, announces that the new additions completed recently and under construction will also run double turn. Some of the orders received by this company follow: 75 horsepower gas engine for the Joseph Buschle Mfg. Co., Cincinnati; 30-horsepower gas engine for the Knowles & Holtman Co., Cincinnati; 12½-horsepower gas engine driven compressor for water wells for the Mt. Auburn Development Co., Dallas, Tex.; 35-horsepower gas engine driven compressor and a 60-horsepower compressor for Hoch Bros., Chicora, Pa., and a 50-horsepower Bessemer engine for the Lake Shore Elevator Co., Cleveland, O.

The orders booked recently by Boyts, Porter & Co., Connellsville, Pa., include several large double plunger pumps of extra large sizes. The American Oak Leather Co., Cincinnati, has ordered one of this type, 20 x 12 x 30 and a capacity of 3,000-horsepower. A double plunger, wood-lined mine pump, 20 x 10 x 30, has been ordered by the W. J. Rainey interests for the Mount Braddock, Pa., works and the Black Diamond Mining Co., of Drakesboro, Ky., has placed an order for an 8 x 60 wood-lined mine pump of the double plunger style to be driven by two 20-horsepower electric motors. Three pumps will be built this month for the H. C. Frick Coke Co. and two for the Orient Coke Co.

Charles C. Murray of Pittsburg, trustee in bankruptcy of the Shenango Iron & Steel Co., announces that the plant at Wheatland, Mercer county, Pa., including all machinery, stocks, etc., will be offered at public sale on Dec. 21. The plant was built in 1872, and rebuilt in 1906. It contains a puddle mill, a 10-inch mill, 18-inch mill, bar mill, coal conveyor housing and engine, faggot room, machine shop, blacksmith shop, ore house, time office, brick shed, pattern shop, tool house, power house, rolling mills, cranes, scales and all other machinery necessary for the manufacture of bar iron.

A new brick plant will be erected next spring by the Pittsburg Silico & Brick Co., at Jackson Center, Mercer county, Pa. At the annual meeting of the company a few days ago, A. A. Graham, of Pittsburg, was elected president; W. M. Graham, of Erie, Pa., treasurer, and C. H. Jaxtheimer, of New Wilmington, secretary.

The Arthur Koppel Co., Pittsburg, is receiving estimates for machinery and equipment for the extension to its plant at Koppel, Pa., which will double the present capacity of the works. Orders will be placed shortly for a number of machine tools, air compressors, punches and riveting machines.

The report that plans have been prepared by the R. D. Nuttal Co., Pittsburg, for a new plant at Claremont, Pa., to cost $1,000,000, is denied. The report published recently stated that the company had purchased a site for a new plant at a cost of $60,000 and that work would be started next spring.

The Republic Iron & Steel Co. has awarded a contract to the Petroleum Iron Co., Petroleum, Pa., for two stacks for its new open-hearth works. Each stack will be 11½ feet in diameter and will take care of the smoke and waste gases from four furnaces.

The Allegheny Valley Brick Co. is awarding contracts for machinery and equipment for a new plant at Olean, N. Y. The new plant will be operated by two gas engines of 165-horsepower each. The company has also placed an order for a 25-horsepower gas engine for its plant at Dewey, Pa.

The National Fireproofing Co. was the lowest bidder for the conduit work to be undertaken by the Belgian government. The contract calls for 1,000,000 feet of underground wire conduit. The material will be shipped from the Perth Amboy, N. J., plant.

Contracts will be awarded this week by borough officials of Sharpsburg,

Pa., for two 300-horsepower water tube boilers, feed water heater and boiler feed pump for installation in the municipal pumping station.

A new foundry will be built next spring by the Erie City Iron Works, Erie, Pa., plans for which are now being prepared. The company is now erecting a new boiler and tank department, the new structure being 100 x 130 feet.

The Iron City Spring Co., which operates a plant on the Northside, Pittsburg, is erecting a new plant at Smallman and Twenty-ninth streets, Pittsburg, which will be ready for operation after the first of the year.

The Salisbury Wheel & Mfg. Co., manufacturer of automobile parts, has awarded a contract for the complete induction motor equipment for its new plant at Jamestown, N. Y., to the Wagner Mfg. Co., Pittsburg.

A 4,000,000 gallon pumping engine is being installed by the Beaver Valley Water Co., Beaver Falls, Pa., at its Eastvale plant. The order for the engine was placed with the Epping, Carpenter Co., Pittsburg.

The Pittsburg Coal Co., Pittsburg, is awarding contracts for the erection of a modern steam power plant at Export, Pa., and is considering plans for a machine and forge shop to be used in repair work.

Orders are being placed by the Consolidated Window Glass Co., Bradford, Pa., for new machinery and equipment for its Hazelhurst, Pa., plant, including an 85-horsepower gas engine.

Contracts are being awarded by the Pocahontas Consolidated Coal Co., Switchboard, W. Va., for a new electric power plant and equipment to cost $50,000.

The Westinghouse Electric & Mfg. Co. recently shipped 15 carloads of equipment to the Braden Cooper Co., Rancagua, Chile.

LOUISVILLE

Automobile Plant and Other Works.

The demand for machinery is fair, a large number of inquiries have been received during the week. It is generally noted, however, that while there appears to be plenty of business in the market, buyers are slow in placing their orders.

Plans have been filed by the Louisville & Nashville for its shops at Boyles, Ala. The power house will be 90 x 110 feet; boiler shop, 130 x 170 feet and the machine shop, 145 x 170 feet. The estimated cost of the entire improvements is $654,000. The contract for the structural steel to be used has been let to the Louisville Bridge & Iron Co. T. E. Brooks, division superintendent at Birmingham, is in charge.

The American Automobile Co., which has its main offices in Louisville, has purchased the building of the Kentucky & Indiana Power Co., New Albany, Ind., and will install machinery for the manufacture of motor cars. It will also remove the equipment it now has at its Kansas City and St. Louis plants and will concentrate its activities in New Albany.

DETROIT

Machine Tool Trade Continues Quiet.

This week has been barren of machine tool business. Dealers have had all of their men busy in the territory and everything that looked like an order has been run down. Never before has the territory been so thoroughly worked. Even a 20-inch upright drill press order looked good. This condition cannot last as the feeling of optimism is everywhere manifest and after the election business will be placed that has been withheld pending the outcome. All of the automobile factories are working and shipments of cars are being made each day.

Arrangements have been perfected whereby the long delayed work of the Fairview pumping station at Detroit will be completed. The work was held up due to the financial embarrassment of the Cary Construction Co. The contract has been assigned to the Hunkin - Conkey Construction Co., Cleveland, and work will begin as soon as the bonds can be transferred. The original contract price was $135,000.00. The new contractors agree to have the work complete not later than May 15, 1911.

The stockholders of the Great Lakes Engineering Co., Detroit, held their annual meeting last week, when the old board of directors was re-elected. Officers of the company, re-elected, follow: President, Antonio C. Pessano; vice president, George H. Russel; vice president and treasurer, John R. Russel; vice president and secretary, H. W. Hoyt. The directors declared the regular quarterly dividend of 1½ per cent.

The Brooks Boat Co., Saginaw, Mich., is planning to enter into the manufacture of aeroplanes. This is the first factory in the state to take up this work in a commercial way. The aeroplanes will be sold "knocked-down", similar to the other products of the Brooks Co.

The Hudson Motor Car Co., Detroit, has just moved into its new buildings at Fairview. This is considered one of the best designed automobile factories in Detroit.

TORONTO

Extensive Building Operations Require Considerable Equipment.

There is practically no change in conditions, nearly all lines continuing active. The large amount of building, which, despite the advance of the season, shows few signs of slackening, has created a heavy demand for electric fittings and plumbers supplies.

T. A. Russell, general manager of the Canada Cycle & Motor Co., Toronto, has just returned from an extensive tour through the western provinces, in the course of which he traveled upwards of 2,000 miles by automobile. He reports excellent prospects for business during the coming year and a particularly big demand for motors. Whereas the demand, a few years since, was for the cheaper makes, there is now a call for machines of a heavier and more powerful type.

The Ontario Wind Engine & Pump Co., Toronto, is shipping four large tanks to Winnipeg for the Canadian Northern railway, and has orders for 10 tanks for Cobalt mining companies. It has orders in hand to keep the plant going till the end of the year.

The town of Maple Creek, Sask., is asking for proposals for the erection and installation of an electric light and power plant. A franchise for a term of years will be granted to the successful bidder.

The Birrell Motor Plow Co., Winnipeg, is negotiating with the town of Yorkton, Sask., with the view of starting a branch plant at that town at a cost of $50,000.

The Kingston Locomotive Works has received an order from the Canadian Pacific railway for 10 locomotives and has other extensive contracts in prospect.

MISCELLANEOUS

The secretary to the director of public safety, No. 109, City Hall, Cleveland, will receive bids until Nov. 18, for furnishing and installing a steam and electric generating unit, switchboard and appliances for the Service Quadrangle, Colony Farm, Warrensville, O. Plans and specifications can be obtained at the above mentioned office.

The Symmes Construction Co., Niagara Falls, Ont., is considering plans for the construction of a power plant in the Porcupine mining district of northern Ontario, to be located on Sandy Falls, on the Nigigoni river. Over 8,000 horsepower will be developed.

The contract for erecting a brass foundry, machine and pattern shop, for the Bunting Brass & Bronze Co., Alliance, O., has been let to H. J. Spieker Co., 409 Michigan street, Toledo. The company is now in the market for brass foundry equipment.

All bids received by the trustees of public affairs at Jackson, O., for furnishing material and enlarging and improving the municipal electric light plants, have been rejected and new bids will be asked. W. A. Dallas is clerk of the trustees.

Plans are being prepared by Malcomson & Higginbotham, Moffatt building, Detroit, for the construction of a 67 x 200-foot, three-story, automobile lamp factory. A power plant will also be erected.

The American Shipbuilding Co. has broken ground for an addition to its plant at Lorain, O. The buildings to be erected are a machine shop, pattern shop and foundry. These will cover from four to five acres.

The directors of the Oakwood Street Railway Co., Dayton, O., are considering the enlargement of their power house.

Defiance, O., Carl Smith, city engineer, is considering the construction of a municipal water plant.

J. & L. WIRE PLANT

Now in Operation—Is Up to Date in Every Particular.

The new wire plant of the Jones & Laughlin Steel Co., located in its great new works at Aliquippa, started making wire Nov. 1. The capacity of the new plant when running full time will be about 300 tons of wire a day. At present, it is not operating to full capacity. The products of this new plant will be all kinds of wire nails, barbed wire, fencing, galvanized and annealed wire, wire staples and various grades of special basic and Bessemer wire for screw stock, rivets and nails. The plant is in charge of George A. Paff, superintendent, and the wire sales department is in charge of George Mason, assistant general sales manager. Associated with Mr. Mason in the sales department are Thomas C. Ham and George E. Quigley, men of experience in the wire business.

This plant is one of the largest and best equipped in the country, containing all of the latest appliances for making wire by the most modern processes. Safety devices for the workmen are also a prominent feature of the plant, as well as arrangements for ventilation, light and sanitation, which are the best obtainable. The opening of this additional plant means the employment of several hundred workmen and an increased payroll in the Pittsburg district.

The company has just issued its first catalog on wire nails and wire products. It is a very attractively illustrated booklet of 32 pages and contains much detailed information about the various brands of wire nails, wire rods, barbed wire, staples, annealed wire, galvanized wire and other wire products now being manufactured in the new Aliquippa department of the company. The rod mill has been operating for several weeks to its full capacity, rolling the ordinary grades, together with high carbon, screw stock, bolt and rivet rods.

The new Jones & Laughlin tin plate plant at Aliquippa, which started some weeks ago, is also busy.

The Cleveland sales offices of the Jones & Laughlin Steel Co. have been removed from 808 Rockefeller building, to rooms 1346-52 in the same building.

BIDS ON CAST IRON PIPE.

The Standard Cast Iron Pipe & Foundry Co., Bristol, Pa., submitted the low bids upon about 4,000 tons of cast iron pipe and special castings, proposals for which have been opened by the New York department of water supply, gas and electricity. On the first section of 1,530 tons of pipe and 150 tons of specials, the Standard's bid was $21.56, delivered, for the pipe, and $35.65, delivered, for the specials; on section No. 2 for 1,960 tons of pipe and 300 tons of specials, the low bid was $21.90 for the pipe and $38.80 for the specials; on section No. 3 for 35 tons of pipe and 110 tons of specials, the low bid was $22 for the pipe and $46 for the specials. The Standard company's bids were low on all sections and on both pipe and specials.

COPPER PRODUCERS' FIGURES FOR OCTOBER.

The October report of the Copper Producers' Association shows that stocks decreased 9,631,800 pounds. The statement follows:

	Oct.	Sept.	Oct., 1909.
Stocks previous month.	148,793,714	168,881,245	151,472,772
Production	126,469,284	119,519,983	124,657,709
Total	275,262,998	288,401,228	276,130,481
Domestic deliveries	67,814,172	64,501,018	66,359,617
Exports	68,186,912	75,106,496	56,261,238
Total consumption.	136,001,084	139,607,514	122,620,855
Stocks remaining.	139,261,914	148,793,714	153,509,626

ORDERS FOR STACKS.

The Petroleum Iron Works, Sharon, Pa., has secured an order from the Republic Iron & Steel Co. for two 11½ x 250-foot stacks for the Republic company's works at Youngstown, O. The Petroleum company is also in receipt of 750 tons of tankage from the British West Indies. Its shops are running full on work for various concerns in the United States and Mexico.

ST. LOUIS SHIPMENTS.

Receipts and shipments of pig lead and spelter at St. Louis for the last two weeks were as follows:

	Zinc and spelter.	Pigs of lead.
Receipts:—		
For week ending Oct. 29	84,750	66,976
For week ending Nov. 5	101,730	51,200
Shipments:—		
For week ending Oct. 29	99,970	24,960
For week ending Nov. 5	126,260	28,180

No. 4 stack of the Haselton, O., group of Republic Iron & Steel Co.'s blast furnaces is being completed and it may be ready to light about the first of the year. It is modern in all equipment and a duplicate of No. 3 stack, with 500 tons daily capacity.

The Moon Motor Car Co., St. Louis, has increased its authorized capital from $175,000 to $300,000.

SLUMP IN SHIPMENTS

Of Iron Ore From the Upper Lake Ports.

The ore movement during October reached the respectable figure of 4,877,441 tons, which is, however, somewhat less than the trade expected. The movement shows a loss of 1,748,360 tons, compared with October, 1909, when 6,625,801 tons were moved. Shipments to Nov. 1, however, show a gain of 3,712,974 tons over the corresponding movement last year, reaching altogether 39,978,308 tons. The ore slump which set in two months ago, however, will be further accelerated during November, and the trade does not now expect that the shipments for the full season will be sensibly greater than those of last year. So many vessels have been put into ordinary and so many shippers have concluded to close the season on Nov. 15 that the movement during the closing weeks this year must be very much less than the movement after Nov. 1 last year, when 5,418,745 tons were moved. The Steel Corporation will ship its last cargoes on Nov. 19.

The lake season is rapidly drawing to a close and will practically be over in a fortnight. The Pittsburg Steamship Co. has retired all its barges and will send many of its steamers into winter quarters as soon as they have made another trip. The ore movement will, therefore, show a very heavy slump during November and the total movement for the year will not be very much more than that of 1909.

Following are the shipments by ports:

Port.	October, 1909.	October, 1910.
Escanaba	928,175	639,444
Marquette	528,195	309,283
Ashland	714,271	380,839
Superior	1,003,956	1,317,902
Duluth	2,002,861	1,223,710
Two Harbors	1,448,343	1,006,263
Total	6,625,801	4,877,441
1910 decrease		1,748,360

Port.	To Nov. 1, 1909.	To Nov. 1, 1910.
Escanaba	4,930,971	4,507,517
Marquette	2,507,712	2,998,503
Ashland	3,136,275	3,817,669
Superior	5,747,454	7,802,254
Duluth	11,850,038	13,089,262
Two Harbors	8,092,884	7,763,103
Total	36,265,334	39,978,308
1910 increase		3,712,974

Lake Michigan ore receipts during October were as follows:

South Chicago, Ill.	473,127
Milwaukee, Wis.	17,474
Elk Rapids, Mich.	9,397
Boyne City, Mich.	13,626
Indiana Harbor, Ind.	17,579
Gary, Ind.	215,815
Fruitport, Mich.	3,404
Elk Rapids, Mich.	4,739
Total	755,161

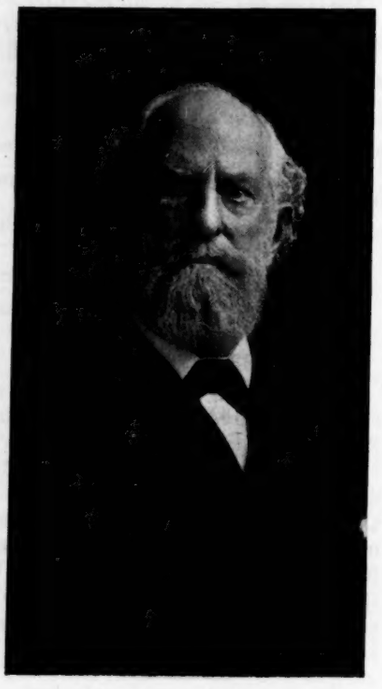
DEATH OF PHILIP CORBIN, OF AMERICAN HARDWARE CORPORATION.

Philip Corbin, president of the American Hardware Corporation and one of the leading manufacturers of the United States, died at his home in New Britain, Conn., Nov. 3, after an illness that had extended over the past two years. He was in his eighty-seventh year, and 60 years of his life were spent in active business, the success of which is reflected in the fact that as president of the American Hardware Corporation, he was, at the time of his death, the head of one of the largest manufacturers of builders' hardware in the world. Mr. Corbin's life was devoted constantly to the principle of hard work and persistent application to business. Starting under the most unpretentious circumstances, he developed a manufacturing enterprise of great proportions and of wide influence. From a capital of $900 invested in a small plant, the business grew to a corporation capitalized at $10,000,000, and employing 6,000 men.

Mr. Corbin was born in Willington, Conn., on Oct. 26, 1824, and the early years of his life were spent in a brief schooling and in farming near his native town. At the age of 20 he went to New Britain, where he secured employment in the hardware factory of Matteson, Russell & Co. Though his compensation was small, he not only provided for his own needs but regularly sent home a small amount to his parents. One year later a lock-making contract given him by his employers, North & Stanley, launched him upon his manufacturing career. This beginning gave him the conviction that in this direction there was opportunity for his advancement in a broader way and it paved the way for the formation in the summer of 1848 of the co-partnership of Doen, Corbin & Co., including his brother Frank, and Edward Doen, for the purpose of manufacturing hardware. Each of the three young men contributed $300 to the capital and $600 of this sum was expended for land and a building. On Sept. 1, 1849, Henry W. Whiting, father-in-law of Mr. Corbin, bought Mr. Doen's interest and two years later he sold his share in the business to the two Corbin brothers. The firm then became P. & F. Corbin, the name under which the business is carried on at present.

In 1851, American manufacture was in its infancy, and nearly all the hardware was imported. Mr. Corbin avoided domestic competition by confining his product to articles made abroad, and as they were better made than the imported goods he found a ready market. In 1852, the business had outgrown its original quarters and Mr. Corbin secured a room in the factory of North & Stanley on the present plant of P. & F. Corbin. Additional room was soon engaged and the old factory abandoned.

Mr. Corbin was quick to appreciate any opportunity for the expansion of his business, and in the first five years of its life added to its line many new articles. It soon became apparent, however, that the limited capital of the firm closed to it many avenues for extension and in 1854 it was decided to form a corporation and allow others to purchase stock in order that



PHILIP CORBIN.

money might be secured to invest in additional eqhipment. This was done on Feb. 14, 1854. Mr. Corbin was made secretary of the company and continued in active charge of the operations. In 1859, he was made treasurer, and was made president at the death of F. H. North, who was one of the new stockholders at the time of the incorporation and the company's first president.

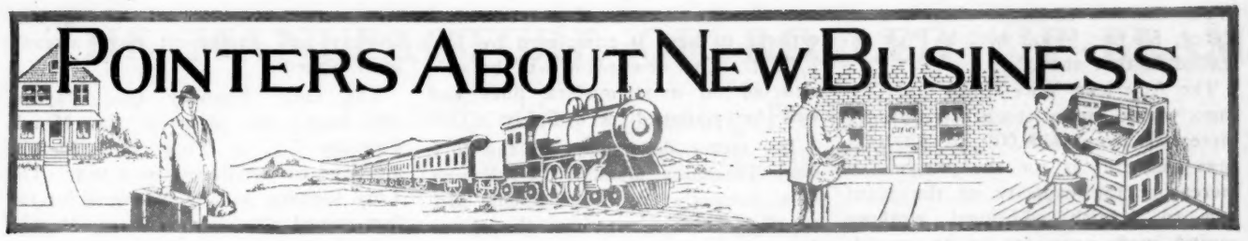
In 1858, Andrew Corbin joined his brother. In 1860, he assumed charge of the New York office, and in 1872 returned to New Britain to become general manager of the factory and its first vice president. So closely did his life become identified with that of his brother that no account of Philip Corbin's career from this time on would be complete without mention of Andrew. While each had his own field of effort, and that of Andrew was subordinate to that of Philip, the two brothers acted in concert and in perfect accord in all things. Philip was for the first time freed from the detail of the production and enabled to devote to the management of the business the rare administrative qualities which he possessed, while the quickening and masterful influence of Andrew's genius permeated the factory. Andrew Corbin died on Jan. 4, 1907.

In 1882, Mr. Corbin decided that the manufacture of cabinet locks could be better conducted as a separate industry than as one of the lines of P. & F. Corbin's goods, and the Corbin Cabinet Lock Co. was accordingly formed. This company's welfare was always a matter of special concern to Mr. Corbin, and its rapid growth and prosperity were a source of much satisfaction to him.

The creation of the American Hardware Corporation was a striking indication of the popular appreciation of Mr. Philip Corbin's business ability and judgment. Difficulties which another man would have found unsurmountable, disappeared before the influence of Mr. Corbin's prestige, and the holders of every share of stock in the two companies assented to the change when the American Hardware Corporation was formed on March 13, 1902, with Philip Corbin as president. While other honors and successes had come to him more or less directly as a result of his ability and reputation, the American Hardware Corporation, made possible only by the universal recognition of Mr. Corbin's sterling qualities, stands peculiarly as a tribute to his genius and high personal worth.

On May 2, 1903, the Corbin Screw Corporation was formed to manufacture screws and screw machine products. On June 11, 1903, the manufacture of automobiles having been favorably considered, the Corbin Motor Vehicle Corporation was incorporated.

In politics, Mr. Corbin enacted the part of a good citizen, using his influence to further the welfare of his city and state, but not seeking office. He served as burgess of the borough for one term, to secure justice; was a member of the common council; subsequently as water commissioner he supervised the enlargement of the system which has given the city its splendid supply. In 1884 he was elected a member of the Connecticut state legislature and in 1888 a member of the state senate.



(In order to assist the post office in delivering letters to new concerns, it is suggested that the names of incorporators be written in the lower left hand part of every envelope addressed to such new companies.)

New Buyers:—

The following manufacturing companies have filed articles of incorporation:

The American Grinder Mfg. Co., Milwaukee, Wis.; $5,000; by Charles A. Krause, Leo Bethke and Frank Lueck.

The Hawkeye Foundry Co., Waterloo, Ia.; $75,000; by H. E. Headford, F. O. Hitchins, H. B. Plumb and W. E. Robinson.

William Corliss Engine Co., of Jersey City, N. J., $50,000; by William Corliss, Edward W. Corliss, and I. Clifford Ladd.

The Punches Repeating Arms Co., Toledo, O.; B. W. Punches, E. W. Doherty, V. D. Hoffman and William Whitaker; $20,000.

The Sheffield Sash Weight & Mfg. Co., Kansas City, Mo.; $7,500; by Solomon Stoddard, George T. Cook and George P. Pierce.

The American Piston Co., Indianapolis, Ind.; $30,000; to manufacture engine parts; by F. O. Fitton, V. D. Morrison and A. H. Schlaegel.

The Tulsa Boiler Mfg. Co., Tulsa, Okla.; $110,000; by J. E. Carnahan, Canton, O.; John A. Woodward, Charles W. Grimes and E. Robitaille, of Tulsa, Okla.

Black Diamond Range Co., Newark, N. J.; general foundry business; $125,000; by Alphons Westee, Orange, N. J.; Charles B. Gurney and Annabel Gurney, both of Newark, N. J.

The Standard Welding & Mfg. Co., Buffalo; tools; $10,000; by Thomas H. Muffitt, 54 West Delevan avenue, John J. Heider, 308 Prudential building, and John Heider, 2268 Main street, Buffalo.

The Rensselaer Valve Co., Troy, N. Y.; valves, hydrants, brass castings and foundry products; $500,000; by Ellis L. Rowe and Irving Rowe, Troy, N. Y., and Thomas Breslin, Waterford, N. Y.

Rapp & Wagman Mfg. Co., Camden, N. J., mechanical and electrical engineer, founder, machinist, etc., $100,000; by William M. Rapp, I. Wagman, Robert F. Rapp and Leon W. Meyers, all of Camden, N. J.

J. S. Bretz Co., Manhattan, New York City; ball bearings, magnetos, etc.; $30,000; by Jacob S. Bretz, Times building, Albrose L. O'Shea, 38 Park Row, New York City; Charles V. Tuthill, 494 Bergen avenue, Jersey City, N. J.

The Gasoline Engine Equipment Co., New York City; boilers, engines, etc.; $10,000; by Frederick K. Loid, 105 Lord avenue, Bayonne, N. J.; Thomas Palmer, 704 West 178th street, Clayton von Culin, 705 West 178 street, both of New York City.

The Gett Mfg. Co., Manhattan, New York City; ball bearings, machinery, engines, etc.; $200,000; by LaFayette B. Gleason, 43 West Thirty-ninth street; F. B. von Teuber, 60 Wall street, New York City; Augustus G. Schultz, 390 North Pearl street, Albany, N. Y.

New Construction:—

The Davenport Locomotive Works, Davenport, Ia., has taken out a permit to build a new carpenter shop, estimated to cost $18,000.

The New Britain Machine Co., New Britain, Conn., is extending its office building by an addition 40 x 40 feet, five stories.

William Hirsch, Cleveland, has let the contract for the erection of a machine shop at 5320 St. Clair avenue, the building to be two stories, 70 x 80 feet.

W. P. Elliott, Chicago, has taken out a building permit for a one-story brick foundry to be erected at 1921 to 1927 Garfield avenue, estimated to cost $5,000.

The Trenton Iron Co., Trenton, N. J., has taken out a building permit to erect a one-story brick addition to its plant on Hamilton avenue, estimated to cost $5,500.

Theodore Peters has organized a company at Ferdinand, Ind., for the manufacture of pumps. The company has leased a tract 65 x 145 feet, on which it will erect a foundry.

Announcement is made by the Davis-Price Foundry & Machine Co., New Cumberland, W. Va., that the plant which was recently destroyed by fire, will be rebuilt shortly. The building will be one-story, brick, with all modern improvements.

The McCullough Iron Co., Wilmington, Del., is planning to build an addition, one-story, 94 x 116 feet, at an estimated cost of $3,000. It will be used as a galvanizing shop.

George Sharpe & Sons, Steubenville, O., are erecting substantial buildings to replace those recently destroyed by fire. One is of brick, three stories, 80 x 120 feet, and the other is of steel and wood, 60 x 110 feet.

The American Steel & Wire Co. has completed plans for a warehouse at Fargo, N. D., 70 x 122 feet. It will be large enough to hold 300 cars of wire fencing, nails and sulphate of iron, three times the capacity of the present warehouse.

Twohy Bros., Portland, Ore., have had plans drawn for a machine and repair shop, one story, 80 x 180 feet, which will be used to repair their equipment used in contracting work. An electric crane with a capacity of 20 tons, will be installed in the shop.

The Omaha Structural Steel Works, Omaha, Neb., has purchased a five-acre tract at Forty-eighth and Leavenworth streets, including a building 120 x 250 feet. The company proposes to move to the new location from its present shops on South Nineteenth street.

The Bay View Foundry Co., Sandusky, O., has found it necessary to add to its core department about 1,700 square feet, the addition being necessary owing to rapidly increasing business. The contract for the addition has been let to G. W. Doerzbach & Bro., of Sandusky.

Forsythe Bros. Co., manufacturing railway supplies and using pressed steel, has purchased a tract of land known as the Grant Locomotive Works addition, Chicago, at Fourteenth street and Fifty-third avenue, on which it is proposed to erect a modern manufacturing plant, employing about 1,000 men.

The Bass Foundry & Machine Co., Fort Wayne, Ind., is planning to install electric power in its various departments. The engine, which will be directly connected with a 400-horsepower generator, is now being built.

When the new carpenter shop is completed, electric power will be first installed in that shop.

The American Wire Cloth Co., Chicago, whose capital stock was recently increased from $100,000 to $200,000, says that this is for the purpose of increasing the capacity of the plant and to furnish additional working capital, made necessary by its expanding business. It proposes to add 100 looms, which are now being built at its own plant. Additional new construction will include an extension to its main building, 150 x 160 feet.

The Augustine Rotary Engine Co., Buffalo, is having plans prepared for a large addition to its plant on Elmwood avenue. The buildings will be commenced at once, one a power house 50 x 50 feet, and the other a factory wing, 35 x 100 feet, three stories. In a short time, two other additions, 35 x 250 and 35 x 350 feet, three stories, will be undertaken. All the construction will be of reinforced concrete, and the estimated cost is about $100,000.

The Dussalt Foundry Works, Lockport, N. Y., whose plant was recently damanged by fire, advises that its cupola room and fuel shed and a part of the main building were destroyed. It is repairing the buildings and putting up an addition 55 x 65 feet to its foundry proper, and a new cupola room 20 x 45 feet. It will install a 30-foot span traveling crane of 10 tons capacity, and a No. 3 Whiting cupola, cinder mill, new core ovens, and new sheds. It also intends installing a few molding machines.

General Industrial:—

The Moline Plow Co., Moline, Ill., has certified to an increase in its capital from $7,000,000 to $9,000,000.

The Wisconsin Engine Co., Corliss, Wis., recently received a contract for three 23 and 46 x 48-inch cross compound Corliss condensing engines from the Tidewater Portland Cement Co., Union Bridge, Md.

The John A. Westover Co., Lincoln, Neb., was recently incorporated with a capital stock of $75,000, by John Westover, Fred S. Westover and Henry A. Lindley. The company will continue the manufacture of iron and steel products.

The Lake Superior Iron & Chemical Co. is building a saw mill as well as a new retort plant at its Newberry, Mich., blast furnace. The saw mill will be 40 x 150 feet, and will have an estimated capacity of 60,000 feet of lumber a day.

The Charter Oak Stove & Range Co., St. Louis, Mo., has its new plant now in the course of erection and expects to have it completed by Jan. 1, 1911. The new plant will be constructed on most modern lines and will be equipped accordingly.

The motor department of the J. I. Case Threshing Machine Co., Racine, Wis., formerly the Pierce-Racine Motor Co., is to discontinue the manufacture of marine engines and boats and will devote all of its efforts to the manufacture of automobiles.

D. J. Dalton, of Chicago, will install foundry equipment in the old foundry of the O. S. Werntz Foundry & Machine Works Co., at Warsaw, Ind., the plant having been purchased by Warsaw business men. At the resumption of business, Mr. Dalton will employ 20 men.

The plant of the Racine Iron & Wire Works, Racine, Wis., has been practically completed and machinery is now being installed. It is expected that the concern will be able to commence the manufacture of ornamental iron work, screen wire and fire extinguishers within two weeks.

Pilliod Bros., Toledo, O., whose incorporation was recently noted, advise that they have leased a plant, although their organization is not yet complete, and expect to begin operating about Dec. 1, manufacturing the Pilliod locomotive valve and gear. No new buildings will be erected at present, and orders for equipment have been placed.

The Duff Mfg. Co., Northside, Pittsburg, has taken over the business of William Forgie, of Washington, Pa. Both companies have been engaged in the manufacture of an oil well jack, although of different designs. It has not been decided whether the new owners will continue to operate the plant at Washington, Pa., or merge it with the Northside plant.

Bids were to have been received by Oct. 28 by Receiver W. B. Melish for the purchase of the Steel Foundry Co., Cincinnati, but, while a number of offers were received for various parts of the plant, none contemplated taking it over as a whole. Since the sale could not be consummated on this basis, Receiver Melish will apply for a court order to permit the sale in parcels.

The Salisbury Steel & Iron Co., Utica, N. Y., advising respecting its recently increased capitalization, says that it contemplates no new construction, but will merely extend the development of its properties at the Salisbury mines, with a view of largely increasing the tonnage output. Contracts for additional mining machinery and equipment have already been placed.

The Ohio Foundry Co., Dayton, has leased the plant of the Morris Foundry Co., at Troy, O., with the privilege of purchasing in a year. The Troy foundry will be managed for the first-named company by J. W. Merkle.

J. S. Lightburn, who declares that he is president and manager of the Memphis Brass Works, Memphis, Tenn., has asked the chancery court to appoint a receiver to wind up the affairs of the company.

The Wilson Foundry Co., a subsidiary of the Wilson Machine Co., Des Moines, Ia., has begun business in the shops of the Crescent Furnace & Foundry Co., on Travis street. The new company has purchased the Crescent plant, and will continue the foundry work with the exception of making furnaces. It will especially manufacture small horsepower engines and other small machinery. It will have a capital stock of $10,000, and these directors: Lucius E. Wilson and Mazlett N. Clark, both of Des Moines, Ia.

The Furnace Equipment Co., which was recently incorporated, will continue the business of the Maryville Foundry, at Maryville, Tenn., and will add equipment needed in the machine shop acquired by the furnace company. The new concern will manufacture as a specialty the McNaughton grate. The officers of the Furnace company are: President, T. McNaughton; vice president and sales manager, D. E. McNaughton, and secretary, treasurer and general manager, H. M. McNaughton.

The Veitch-Matthews Engineering Co., Bessemer, Ala., met recently for the purpose of reorganization, and elected these officers: President, J. A. Lewis; vice president, J. Veitch Sr.; secretary, J. A. Estes; and treasurer, E. L. Huey. The company was organized some time ago for the purpose of manufacturing rotary engines, but because of general business conditions, the erecting of the plant was delayed. The new company proposes to build shops on East Nineteenth street, and to take up the manufacture of the rotary engine.

Fires:—

The plant of the Tacoma Pattern Co., Tacoma, Wash., was badly damaged Oct. 24, the loss being placed at $1,500, with $900 insurance.

The roofing and iron works of C. E. App & Co., 1229 Carondelet street, New Orleans, was badly damaged Oct. 22, the loss being placed at $10,000, partly covered by insurance.

THE MANUFACTURE OF ROLLED "H"-BEAMS

The Difficulties Attending Present Methods and a Suggestion for Improvement

By G. E. Moore.[2]

Many inventors have devoted time and brain work to the perfection of the means for manufacturing rolled beams, and, of later years, more particularly to the manufacture of so-called "H"-beams, or beams having flanges of great width as compared with the height of the beam. With ordinary two or three-high mills having grooved horizontal rolls only, the practical economic limit appears to have been reached in the case of the commercial standard sections; but beams of much larger section than these, and more particularly beams having relatively far wider flanges, are rolled more or less successfully in universal mills which have both horizontal and vertical rolls. Moreover, with a universal mill a more economic distribution and better working up of the metal appears to be attainable than is the case with ordinary grooved rolls. Using grooved rolls only, the width of flanges which it is possible to roll is limited, not only by the necessity of using rolls of very large diameter to accommodate the deep grooves necessary to produce wide flanges and still leave sufficient metal in the rolls to give the necessary strength thereto, but also by the necessity of making such grooves with a very great inclination of their sides in order to avoid the tendency for the metal to become jammed therein, which results in the flanges being weakened if not torn away altogether.

Avoiding Undue Stresses.

Universal mills having a pair of horizontal and a pair of vertical rolls all in the same vertical plane are now in operation, adapted to roll beams of much larger sizes than those hitherto called for, or, say, up to about 30 inches high by 15 inches wide. But the practical difficulties which had to be overcome to insure success in the production of such sections has necessarily involved a complication of the machinery used as compared with the mills customarily used to roll ordinary standard sections.

The difficulty of working up the metal in a complicated section, such as an H-beam undoubtedly is, is to secure sufficient uniformity to avoid undue internal stresses, having regard to the comparative thinness of the metal in the web and flanges necessary to enable them to be manufactured sufficiently cheaply to compete commercially with built-up beams. Another difficulty is that of producing finished beams of sufficiently good appearance, free from fins, eccentricity of web, and other irregularities. These are the chief points which the inventor has had to watch, and to overcome which still taxes his ingenuity.

Types Previously Suggested.

In the succeeding pages the author proposes first to describe briefly a few of the characteristic types of machines disclosed by different inventors through the medium of the patent office of the United States, to offer a few remarks thereon, and, finally, to present his own suggestions for criticism.

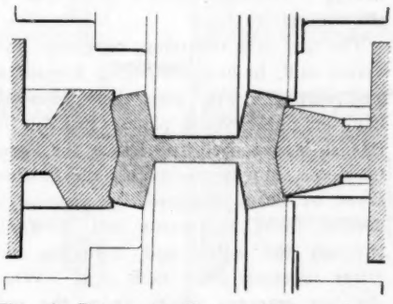


Fig. 1—Roughing Rolls, Open. Sack.

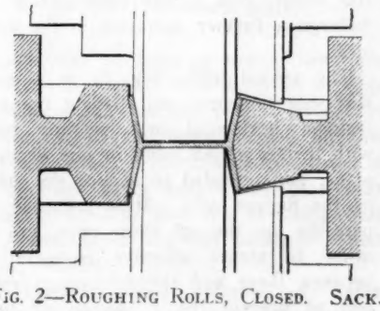


Fig. 2—Roughing Rolls, Closed. Sack.

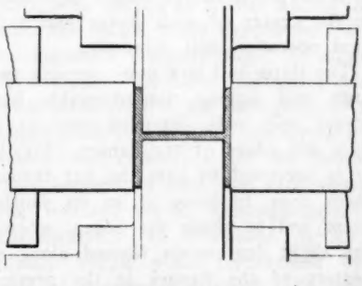


Fig. 3—Finishing Rolls. Sack.

H. Sack, Patent No. 365,100 (1887), describes a single reversing universal mill having a pair of horizontal rolls and a pair of vertical rolls, with their axes all lying in one vertical plane, the two horizontal rolls being both alike but individually unsymmetrical, whilst the two vertical rolls are both different but individually symmetrical (Figs. 1 and 2). Thus the gaps between the rolls are, on one side, at the extreme outside edges of the flanges, and, on the other side, at the extreme inside edges of the flanges. After each pass between the rolls, the bar is tilted half round, and the positions of the flange edges relatively to the position of the gaps between the rolls are reversed, and the edges which in one pass were adjacent to the gaps between the rolls are, in the subsequent pass, adjacent to the closed corners of the rolls. In this way the surplus metal extruded between the gaps of the rolls in one pass is rolled down and suppressed in the next.

Sack's System.

The use of a single set of rolls for the reduction of the preliminary bar into a beam renders reversing and adjustment of the rolls after each pass necessary, and it is impracticable, with the rolls as described by Sack, and illustrated, to have a closed pass between them. At best, gaps are left at the corners of the flanges, which gradually become narrower as the pass is reduced and the blank rolled down, until the final adjustment is made prior to the final reduction, when the gaps are reduced to a minimum. Nor, even at the final pass, is it practicable to have an entirely closed pass, because, although the rolls may be adjusted prior to the final reduction so that they touch and the pass is practically closed, yet directly the bar enters the pass deflection takes place which opens out the pass, and gaps are left between the rolls where fins will be formed on the bar.

With this method the section is developed with flanges outwardly bent from the longitudinal center line, in order to obtain a better rolling effect with the horizontal rolls upon the flanges, and this feature renders necessary the use of a finishing set of rolls (Fig. 3) through which the bar is passed

[1]Paper presented to the Iron and Steel Institute, Sept., 1910.
[2]Loughborough.

after having been completely reduced in the previous set. The pass between these rolls need not be adjustable excepting to compensate for wear or displacement, and may be fixed in the ordinary way. Its shape is exactly that of the section required, so that the effect of passing the bar through these rolls is merely to square up the flanges and give a final finish to the bar, particularly at the corners of the flanges, where traces of surplus blank metal may have been left after reduction in the previous mill. No appreciable re-

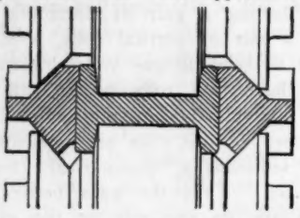


FIG. 4—2-HIGH ROLLS, OPEN. SEAMAN.

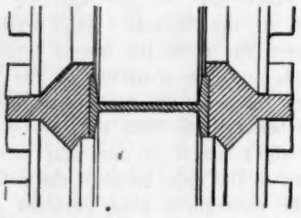


FIG. 5—2-HIGH ROLLS, CLOSED. SEAMAN.

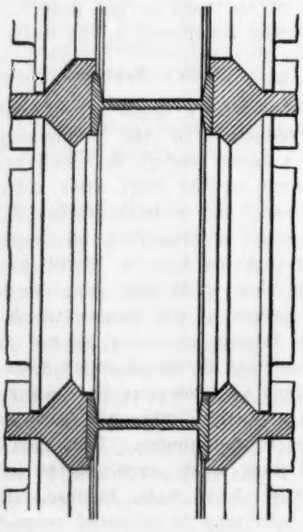


FIG. 6—3-HIGH ROLLS. SEAMAN.

duction need be given to the bar in the finishing rolls, and consequently no appreciable deflection of the rolls takes place when the bar is passed through them; the pass, therefore, remains practically closed, and the formation of fins on the finished bar is avoided.

J. L. Seaman, Patent No. 400,495 (1889), describes a single reversing universal mill having a pair of horizontal rolls and a pair of vertical rolls, with their axes all lying in one vertical plane, the two horizontal rolls being unlike each other but individually symmetrical, whilst the two vertical rolls are both alike but individually unsymmetrical (Figs. 4 and 5). Thus, as in the Sack mill, the positions of the flange edges are changed relatively to the gaps between the rolls by tilting the bar half round after each pass, and thereby rolling down in one pass the surplus metal extruded between the gaps in the rolls in the previous pass. Or he proposes to attain the same result, without tilting, by using a three-high universal mill having rolls of exactly similar construction to those described above, but with the top and bottom rolls alike and the center roll different (Fig. 6).

In this mill the bar is developed with straight flanges lying in a plane at right angles to the web, so that no subsequent straightening is required, and the bar may be finished in the one mill only.

Kennedy's System.

J. Kennedy and H. Aiken, Patent No. 410,107 (1889), describe a series of mills comprising three different types, each having a function distinct from that of the others.

The first is a reversing, roughing, universal mill, having adjustable horizontal and vertical rolls, with their axes all lying in one vertical plane (Fig. 7). In this it is proposed to reduce the ingot or bloom into approximately the finished form of beam required, by passing it several times backwards and forwards through the rolls, and adjusting the latter together after each pass. When the bar emerges finally from the mill the sides and edges of the flanges are still rough, and it has consequently to undergo a further operation in the next mill.

The second mill (Fig. 8) is a non-reversing universal mill having non-adjustable horizontal and vertical rolls with their axes all lying in one vertical plane, and intended to reduce the sides of the flanges only. It is proposed to pass the bar through these once, and in order to secure effective co-operation between these and the subsequent rolls and to prevent the formation of fins, it is proposed to roll slight depressions in the center of each flange which the next operation will obliterate.

The third mill is a non-reversing two-high mill having non-adjustable horizontal rolls only, intended only to reduce the edges of the flanges (Fig. 9). It is proposed to pass the bar through them once to bring it to its finished form and to shape the edges, whereby the slight depressions formed along the centers of the flanges in the previous mill will be exactly filled in this operation, and no fins will be left on the finished bar.

L. D. York, Patent No. 410,724 (1889), covers a single-reversing universal mill having a pair of horizontal rolls and a pair of vertical rolls with their axes

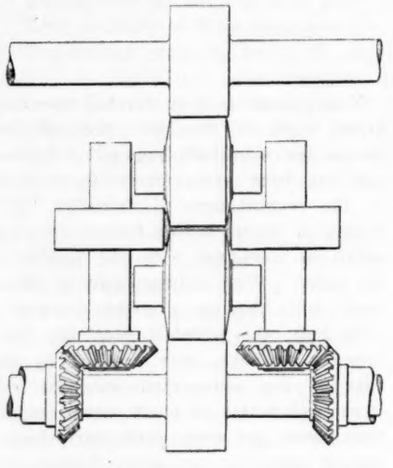


FIG. 7—FIRST MILL. KENNEDY.

all lying in one vertical plane, the horizontal rolls being both alike and symmetrical, and the two vertical rolls similarly both alike and symmetrical (Fig. 10). It does not transpire how the formation of fins is avoided, but some supplemental means would be required, as gaps must necessarily occur between the rolls until they have been adjusted to their ultimate positions prior to the

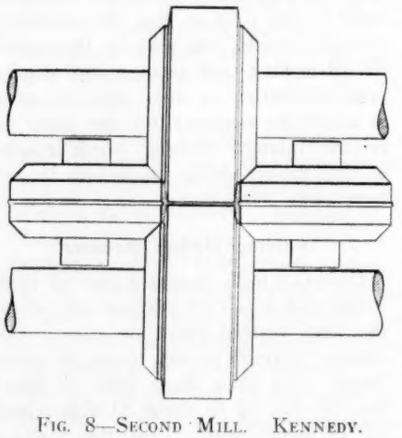


FIG. 8—SECOND MILL. KENNEDY.

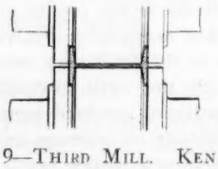


FIG. 9—THIRD MILL. KENNEDY.

final pass, and fins would inevitably be formed on the edges of the flanges of the bar.

E. M. Butz, Patent No. 499,651 (1893), describes a series of non-reversing universal mills, each having a pair of hori-

zontal rolls and a pair of vertical rolls with their axes all lying in one vertical plane, the two horizontal rolls being alike and symmetrical, and the two vertical rolls being similarly alike and symmetrical (Fig. 11). The rolls are non-adjustable, having a fixed pass, and the bloom is reduced by passing it once only through each set of rolls, the pass of which is narrower in each set than in the preceding set, until in the last set of rolls the pass has the exact contour of the finished beam. Thus, as many mills must be used as number of passes necessary to reduce a bloom into a finished beam, each mill having its rolls shaped according to the reduction required to be given in each pass.

The rolls being fixed and the adjacent surfaces of the horizontal and vertical rolls being suitably shaped so that they are almost in contact with each other, it is probable that no very pronounced

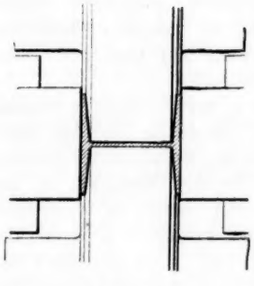


FIG. 10—YORK'S MILL.

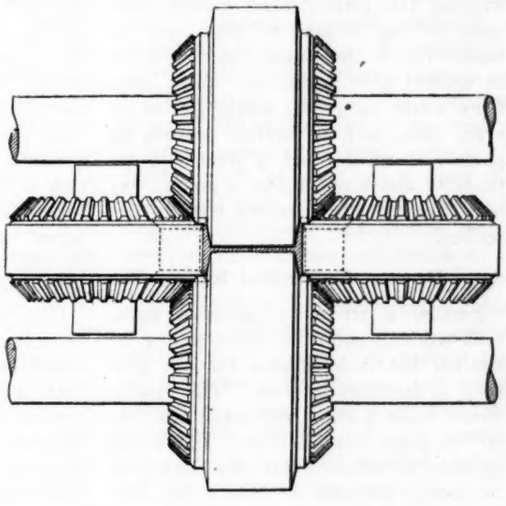


FIG. 11—BUTZ'S MILL.

fins will be formed on the bar; but as it is not practicable entirely to close the gaps between the rolls, particularly as during rolling considerable deflection takes place and the pass somewhat opens out, it is certain that at least beads, if not fins, would be formed on the corners of the bar flanges. Consequently, to obviate this, Butz proposes to use supplementary means to roll down the corners of the beam flanges adjacent to the gaps between the rolls. These consist of two small idle rollers, one on each side of the beam as it emerges from the main rolls, as shown dotted on the sketch (Fig. 11), and so adjusted that at each successive rolling operation the pass between the main rolls would be only just filled up at those corners, and there would not be sufficient metal to flow into the gaps and form fins. It appears, however, as if this arrangement would necessitate some means of supporting the flanges, as otherwise they would become bent, and consequently the corners would not be rolled down in the manner intended.

H. Grey, Patent No. 587,958 (1897), describes a reversing universal mill having a pair of horizontal rolls and a pair of vertical rolls with their axes all lying in one vertical plane, the two horizontal rolls being alike and symmetrical, and the two vertical rolls being similarly alike and symmetrical (Fig. 12). This mill works in combination with a second mill having a pair of symmetrical horizontal rolls only. The first mill has rolls for shaping the web and sides of the flanges of the beam but not the edges of the flanges; and the second mill has rolls for shaping the edges of the flanges only.

The two mills are situated as close together as possible, and have their driving and adjusting mechanisms connected together so that the bar passes through both sets of rolls as nearly simultaneously as possible with such an arrangement. Thus on one portion of the bar the flanges are being shaped on their edges, whilst a short distance farther on the sides of the flanges and the web are being formed, and the resulting beam is free from fins and presents a good appearance.

The foregoing systems of rolling beams devised by different inventors have been chosen as typical and to illustrate the means which experience teaches or ingenuity suggests might be adopted to overcome the chief difficulties which were mentioned at the beginning of this paper, each pointing out the direction in which the endeavors of the inventor were brought to bear, and each possessing features which, although involving complications as compared with the ideally simple plant represented by a pair of horizontal grooved rolls, yet to be considered, for the time being at

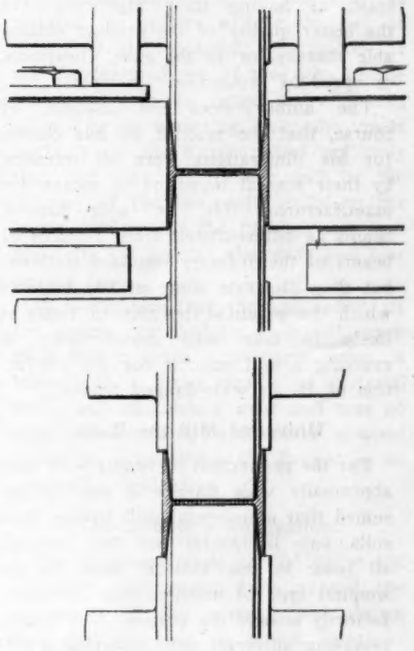


FIG. 12—GREY'S MILL.

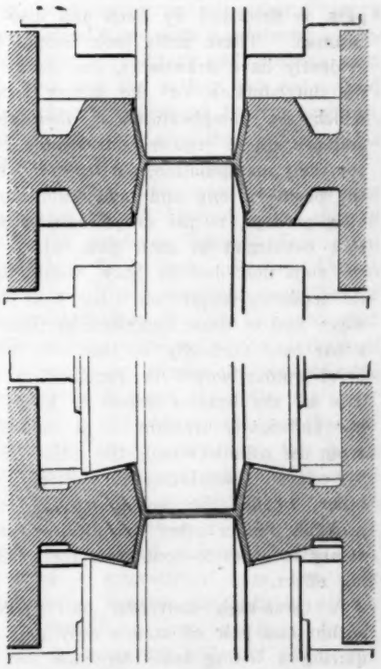


FIG. 13—MODIFIED, SACK MILL.

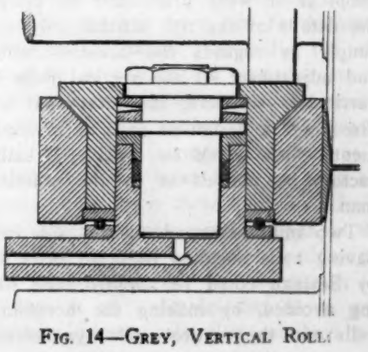


FIG. 14—GREY, VERTICAL ROLL.

least, as having their justification in the better quality of the product obtainable thereby, or in the ease, cheapness, or speed of production.

The author does not assume, of course, that the systems he has chosen for his illustrations were all intended by their several inventors as means for manufacturing H-, or wide-flanged, beams as differentiated from I-beams or beams of the ordinary standard sections; but they illustrate some of the features which the practical designer of today is likely to take into consideration in evolving a mill suitable for the production of H- or wide-flanged beams.

Universal Mill the Basis.

For the production of beams with such abnormally wide flanges it may be assumed that a universal mill having four rolls, two horizontal and two vertical, all lying in one vertical plane, is the simplest type of machine that can satisfactorily answer the purpose. A single-reversing universal mill, requiring a tilting gear on each side with which the bar is turned half round after each pass, is described by Sack and also by Seaman. These mills look simple but evidently have drawbacks, due partly to the introduction of the tilting gears, which are complications in themselves and are apt to require considerable time for their manipulation, particularly when the beam is long and bent; and partly also, perhaps, to the unsymmetrical section developed at each pass which, in the rolls described by Sack, would have the tendency to produce a bar bent sideways, and in those described by Seaman a bar bent vertically, so that very powerful guides would be required in the case of the heavier beams to keep the bar sufficiently straight as it emberges from the rolls to enable the tilting gears to operate satisfactorily. Briefly, in other words, the unsymmetrical rolls probably render other complications necessary in order to counteract their bending effect.

A three-high universal mill housed within one pair of stands only and requiring a lifting table on each side is described by Seaman (Fig. 6); and this would doubtless be a simple system to adopt if it were practicable to design the details of the roll satisfactorily and simply as regards the accommodation and adjustment of the vertical rolls in particular. Hitherto the author has not discovered a design of such an arrangement which would be considered satisfactory by himself or by the practical man.

Two mills arranged side by side and having rolls such as those of Sack or by Seaman could be adopted, and tilting avoided, by making the horizontal rolls and the vertical rolls symmetrical in each case, but so formed that in one mill the edges of the flanges would be formed by the horizontal rolls only, and in the other mill by the vertical rolls only (Fig. 13). Then after each pass the bar could be shifted from the one mill to the other, being rolled alternately in each mill until completely reduced. By this means the formation of fins would be avoided but the plant would be considerably complicated, and as the centers of the passes in the rolls of the two mills could not conveniently be arranged very close together, the shifting gears would require to be particularly powerful and quick-acting in order not to lose much time over this operation.

A plurality of mills having universal rolls, or horizontal rolls only, each mill intended for developing a certain portion of the section, is described by Kennedy and Aiken, and also by Grey; but whereas the former leave certain portions of the section to take care of themselves in the initial passes and to be worked upon in the final stages only, Grey works upon the whole section at every pass, and his system appears to possess advantages and to combine practicability and simplicity to a greater extent than the other systems hitherto described.

Driving the Vertical Rolls.

Finally, a series of universal mills, each working upon the whole section of the bar but each adapted for one pass only, is described by Butz. This system would entail perhaps the maximum outlay on plant and machinery, and would possibly be adapted for the maximum production per unit of time. For rolling rails, of which thousands of tons of one section can be disposed of on a single contract, a plant of this description might possibly be a good investment, but for the manufacture of beams it seems more than doubtful whether it would be profitable to roll a sufficient quantity of each section to justify the expense of the plant and the time and trouble involved in changing so many sets of rolls for each section of beam.

Having dealt at some length with the various means adopted to overcome or prevent the formation of fins, which has been shown to be a matter of great importance calculated to influence enormously the design of the rolls, of the mill containing such rolls, and even of the disposition of the whole plant, some mention should be made of the other features of the designs illustrated, for which they have also been specially selected.

Seaman, Kennedy and Aiken, Butz and Grey, have all endeavored to devise means for driving all the rolls of their universal mills, whereas Sack and York make no attempt to drive the vertical rolls, but content themselves with driving both the horizontal rolls and letting the vertical rolls rotate by contact with the moving bar as it is drawn through the pass by the driven horizontal rolls.

Seaman shows conical surfaces on the horizontal rolls engaging conical surfaces on the vertical rolls, contact being maintained between the two rolling surfaces by the pressure of the bar as it is squeezed between the rolls. This design has such grave defects that it cannot be regarded as mechanically sound enough for practical purposes; for, to be effective and avoid excessive wear and tear, the sides of the conical surfaces should be at such angles that, if prolonged, the apices of the cones represented by the prolonged sides would meet at the centers of the respective rolls, thus maintaining equal peripheral speed throughout the adjoining surfaces, in the same way as bevel gearing is designed. This is so obvious that it needs no further illustration; but if the vertical rolls were so designed their conical surfaces would make such acute angles that they would have a powerful wedge action, and, on application of the rolling pressure, component forces of excessive magnitude would occur, resulting in excessive deflection of the rolls, wear and tear, and probably a wrecked mill.

Grey shows a device whereby conical or cylindrical collars on the top horizontal roll engage, by frictional contact, with conical or flat surfaces on the vertical rolls, and contact is maintained between the two by means of hydraulic pressure (Fig. 14). Like Seaman's design, this has also the defect that the peripheral speeds of the frictional surfaces are not constant throughout, and this defect cannot be remedied without introducing others as great or greater. Moreover, the driving force imparted to the vertical rolls by such means must be so limited as to render it inoperative for practical purposes. Altogether the device looks too unsound mechanically for practical purposes.

Friction Drive Defective.

Kennedy and Aiken, in their second mill, show in contact conical surfaces which are designed on proper lines, but between which effective contact could hardly be maintained during rolling, for the pressure would cause deflection and spreading of the rolls; nor could sufficient pressure be applied in any case to render such contact very effective. They suggest, however, that the friction cones could be replaced by toothed gearing, and similar toothed gearing is also suggested by Butz; but in both cases, although a positive drive would be obtained, it would not be possible to ad-

just the rolls even slightly without interfering with the proper engagement of the gearing.

The neatest device for driving all four rolls whilst still maintaining adequate adjustment between them is that shown in the first mill by Kennedy and Aiken. In this case the rolling pressure on the horizontal rolls is directly utilized to furnish pressure to give the requisite frictional contact between the driven and the idle horizontal rolls, whilst the vertical rolls are positively driven by gearing. Such a device would doubtless give satisfactory practical results, although it is doubtful whether the results obtained thereby would compensate for the complications which it involves in the mechanism of the mill.

The Action of the Rolls.

In the manufacture of H-beams, a bloom is usually first reduced in a blooming mill to a rough I-shape, and thereafter operated upon and finished in the universal mill; and the idea that it is necessary to drive the vertical rolls in the universal mill as well as the horizontal rolls appears to be more theoretical than real.

The advantage of driving the vertical rolls instead of letting them run idle is most apparent before the bar has been gripped by the rolls as it enters the pass, and it is then conceivable that it would be easier to grip the bar if the vertical rolls were driven. Once the bar has been gripped by the driven horizontal rolls there is, however, no apparent drag upon it due to any lagging of the vertical rolls. In fact, if a tendency for the vertical rolls to lag behind were present no frictional device on the lines of any of those disclosed would be sufficiently powerful appreciably to diminish such a dragging effect.

The best conceivable frictional device for driving the idle vertical rolls is afforded as soon as the bar has been gripped by the rolling surfaces of the horizontal rolls and is in contact with those of the vertical rolls, and, as before stated, an independent frictional drive could only serve a useful purpose providing it were sufficiently powerful, by helping to introduce the bar within the pass before it had been gripped by the horizontal rolls, but not otherwise.

In this connection the fact must not be overlooked that the horizontal rolls do not operate upon the web of the beam alone, but operate equally upon the sides and perhaps also upon the edges of the flanges. Thus it is not a case of the flanges being pulled through the rolls by a force imparted to the web, but as a matter of fact the flanges are directly gripped by the driven horizontal rolls, and the vertical rolls are only a form of surface for resisting the side pressure and participate in squeezing the bar, and have really no appreciable tendency to slip and lag behind. It is obvious, however, that the horizontal rolls will have a better grip upon the flanges the more the inside faces of these are inclined outwardly, and the greater the inclination the greater will be the rolling effect also. Consequently the author ventures to express the opinion that the method described by Sack, whereby the section is developed with the flanges outwardly bent from the horizontal center line, is not only peculiarly well adapted for rolling H-beams having very wide flanges, but the material in such beams should also be particularly well worked up and free from internal stresses.

The modern tendency is to reduce the inclination of the flanges of beams in order that the material may be better distributed by concentrating it as little as possible in the center of the section, and distributing it more outwards, in order to obtain a higher moment of inertia, and thereby greater strength for a given weight. This applies particularly to H-beams intended to be used as columns, where the least moment of inertia must be used as a basis for calculating their resistance against buckling, and where the ideal section should have an equal moment of inertia in all directions.

Therefore, by so distributing the material in the flanges that a greater amount than formerly is concentrated on the edges of the flanges, and a proportionately lesser amount at the roots where they join the web, the moment of inertia is increased without increasing the weight of the beam.

Sack's Method Advocated.

Now, with the system described by Sack, the flanges can just as easily be made parallel throughout, or without any taper, as otherwise, thus obtaining the advantage of increased strength without adding to the weight of the beam. But in addition to this advantage, such beams possess the further advantage that they can be drilled and punched, rivet and bolt heads bedded, and connections with other members made much more easily and cheaply than the ordinary sections having flanges which taper however slightly. These advantages are, moreover, obtained without sacrificing in any way the quality of the materials, but rather the contrary is the case.

With all systems in which the flanges are developed straight—that is to say, with their outside surfaces at right angles to the plane of the web or nearly so—a certain inclination of the inside surfaces is essential to the proper performance of the rolling or reducing operations, and the more this taper is reduced the greater will be the risk of damaging the material, by reason of the greater tendency of the sides of the horizontal rolls to scrape away instead of rolling or squeezing away the inside surfaces of the flanges; and not only this, but also the greater will be the friction of the horizontal rolls on the inside surfaces of the flanges, and consequently the greater the wear and tear on the rolls.

It is obvious that the application of the system described by Sack will result in a better beam, a stronger beam, a beam with a better quality of material in it, and diminished wear and tear of rolls, as compared with other systems which do not develop the flanges in an outwardly bent state.

The Author's Suggestion.

The extensive trials carried on at the Rombach iron works have proved the soundness of the system, and shown that the direction in which improvements can still be made lies chiefly in the adaptation of the plant for producing large quantities of material on a commercial basis with a minimum outlay in capital expenditure and working cost. To this end the author has endeavored to apply the experience he has acquired, and ventures to give the results of his efforts in the succeeding.

From what has been stated in the foregoing, it will be understood that in order to produce H-beams free from fins, there is a choice of two distinct systems. First, the mill may be so constructed that one set of universal rolls operates upon the whole of the section excepting where the unavoidable gaps occur between the rolls, the positions of which gaps must be changed frequently or at every pass, this being attainable with one set of universal rolls forming an unsymmetrical pass as regards the location of the gaps, or with two sets of universal rolls, each forming a symmetrical pass, but each different as regards the location of the gaps—that is to say, using a single-reversing universal mill and tilting the bar half round between the passes, or using two universal mills (which may be reversing or non-reversing), and shifting the bar from one to the other between the passes. Secondly, the mill may be so constructed that one set of universal rolls operates upon the greater portion of the section and is adapted to reduce and elongate the bar as a whole, whilst a second set of rolls operates only upon those portions of the bar which are not operated upon in the first set, and are adapted to reduce the bar locally but not to elongate it or reduce it as a whole—that is to say, using a primary reversing universal mill

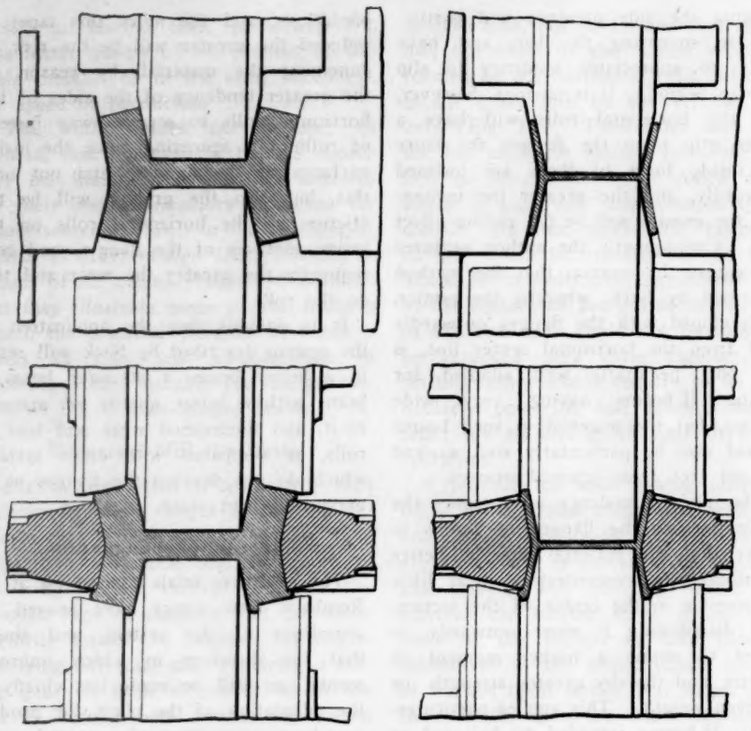


FIG. 15—MILL PROPOSED BY THE AUTHOR.

in tandem with a secondary reversing mill, the two situated so close together that the bar is operated upon by both at the same time, although on portions a short distance apart.

It is with the second of these systems that the author wishes to deal, because the first is already sufficiently well known, and because he believes that the second possesses greater possibilities of development in the direction of economy.

Grey uses a primary reversing universal mill with four rolls operating upon the web and the sides of the flanges of the bar, reducing and elongating the bar as a whole, but leaving the edges of the flanges untouched; and in tandem therewith a second reversing mill, having two rolls which guide the bar and operate upon the edges of the flanges only. Thus, in the tandem mill, at every pass the bar is operated upon all over, and the formation of fins is prevented.

Retaining the system of Sack, in which the beam is developed with outwardly bent flanges, the author suggests the employment of a primary reversing universal mill having its four rolls shaped to operate upon the web and sides and edges of the flanges, with the gaps between them located somewhat short of the extreme edges of the flanges, and sufficiently wide to prevent the extruded metal from cooling too quickly; and in tandem therewith, a secondary reversing universal mill with rolls shaped to guide the bar and roll down only the surplus metal extruded between the gaps of the primary rolls (Fig. 15).

Any irregularities which might still be left at the edges of the flanges after the last pass in this mill could then be eliminated altogether by properly shaping the rolls, so that the final pass required to straighten out the flanges in the separate set of rolls would roll down or fill up any irregularities, as the case might be, and give the section a final finish all over. The tandem system of rolling has the advantage that the beam is reduced all over, and extrusions of metal beyond the limits of the desired contour rolled down all in one pass, so that the mill may work uninterruptedly backwards and forwards, and no time be lost in tilting or shifting from one stand to another. The cost of the equipment should be very slightly, if anything, more than that of a single mill with a suitable tilting gear; but even if the cost were considerably greater, it would be more than justified by the increased output, and by the saving of the extra wages which would be incurred in the more elaborate manipulation. The plan of such a mill is shown in Fig. 16.

Where two stands are used, and the bar shifted from one to the other, an increased output might be looked for proportionate to the increase in the cost of the plant and wages, provided that two bars could be rolled simultaneously and non-reversing engines used; but it is a question whether the quantity of a given section required to be rolled at one time would justify the additional capital outlay in the plant required for such an arrangement, having regard to the fact that the rolls in both stands could be adapted for only one size of beam at a time.

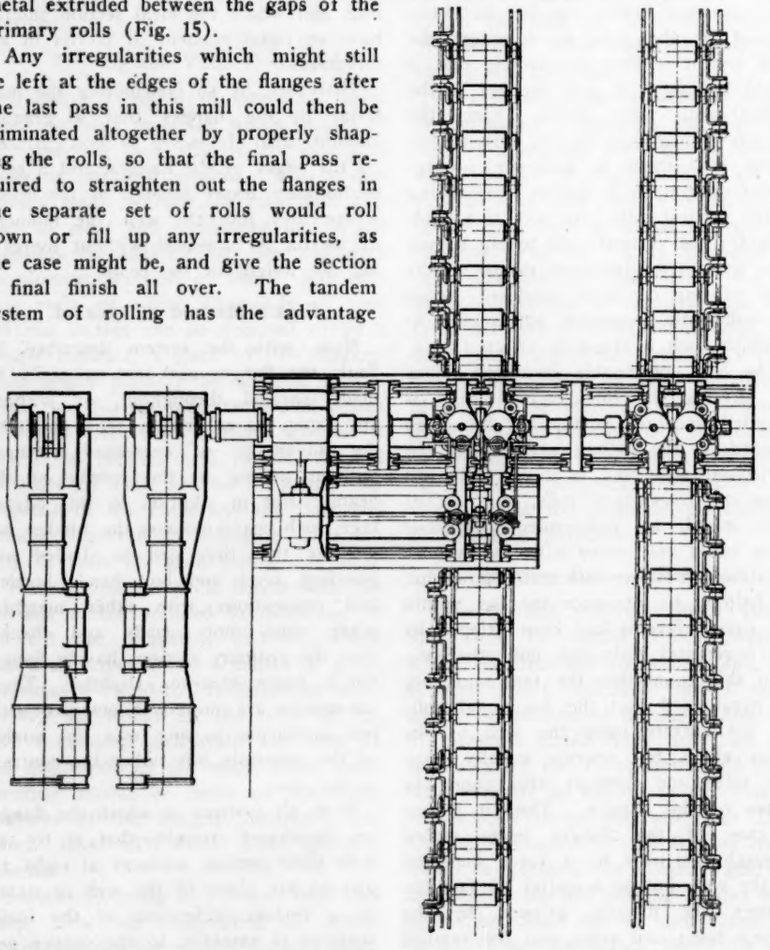


FIG. 16—PLAN OF MILL SUGGESTED IN FIG. 15.

A Foundry Grab Bucket.

Foundrymen have long felt the need of a grab bucket, suitable for handling sand and for cleaning up the floor, which could be operated by the regular foundry crane, without the necessity for investing in special hoisting apparatus. After considerable experimenting, the Pawling & Harnischfeger Co., Milwaukee, has produced a bucket along these lines which has proven entirely practical and satisfactory in everyday foundry service.

One of the features of this bucket is, that in operation it is merely picked up by the hook of any ordinary traveling crane, no special hoisting apparatus being necessary. It is manipulated entirely by the crane and the single tripping line, and may be hooked onto or off in an instant, leaving the crane free for other work.

Fig. 1 shows the bucket lowered, ready to pick up its load. The bucket is carried on two wire ropes which are deadened in an equalizer fixed to the framework. From their point of fastening, the ropes lead downward around the pulleys in the tackle block and then up again, terminating in a heavy cast steel bail or yoke which is placed over the crane hook.

When the crane hook is raised, with

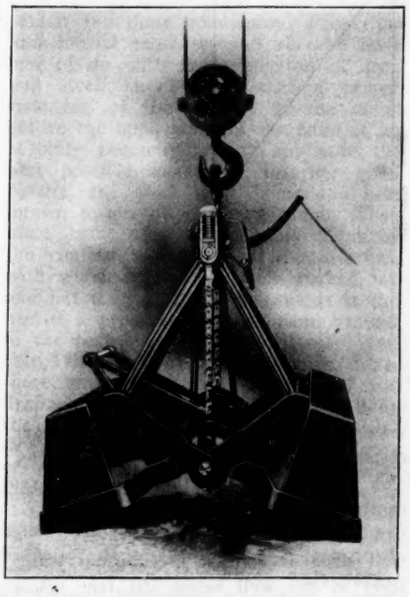


FIG. 1—GRAB BUCKET READY TO TAKE UP LOAD

the bucket in the position shown in Fig. 1, the jaws of the bucket close, picking up the load. By means of a linkwork the tackle block moves up in a straight line. As the bucket is lifted, it assumes the position shown in Fig. 2. In this position it may, with its load, be raised or lowered, or carried to any point reached by the crane.

To drop the load, the tripping line attached to the tripping lever is pulled, thus disengaging a hook which connects the main bucket pivot to the tackle block. This allows the pivot center to descend and the bucket to open into the position shown in Fig. 3, discharging the load. In this position the bucket

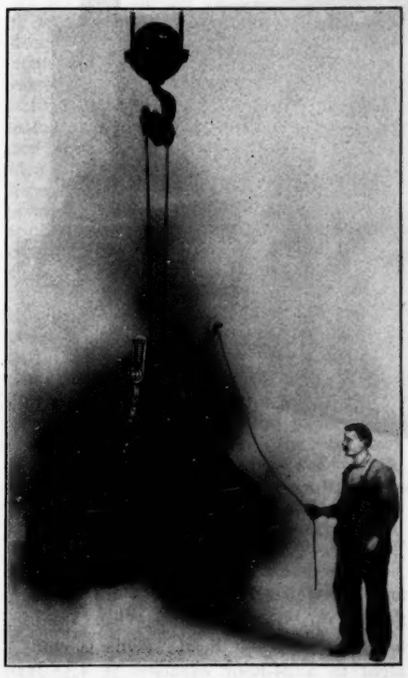


FIG. 2—GRAB BUCKET CLOSED WITH LOAD

may be carried about, raised or lowered by simply manipulating the crane.

When lowered to the ground, as soon as the jaws strike, the stress on the tackle block is relieved and, since the crane hook continues to descend, the tackle block descends in an arc until the hook on the under side of the tackle block again catches the main pivot center, restoring the mechanism to the position shown in Fig. 1. The heavy chains, shown in Figs. 1 and 3, limit the opening of the bucket leaves or jaws and are connected at the top to spiral springs which absorb the slight shock incidental to the opening of the bucket.

The bucket is designed as a scraping tool, rather than as an excavator, and is used entirely to handle sand to and from the bins or pile, and is being employed in foundries for leveling off and cleaning up the floors after the flasks are shaken out. In this service, in a large steel foundry, one bucket supplanted six men employed as sand shovelers. This gives some idea of the labor saving possibilities of the device.

The capacity of the bucket is 1½ cubic yards; loaded with sand it weighs four net tons and empty, about two tons. The bucket may be handled by any crane of sufficient capacity. The floor space covered, when the bucket is spread open, is 6 x 6 feet, the bucket being made wide to cover as large an area as possible. The bucket will work in a headroom considerably smaller than that usually required by the ordinary type of grab bucket, and is durable in every point of construction.

A Shockless Jolt Ramming Molding Machine.

A jolt-ramming molding machine, built by the Osborn Mfg. Co., Cleveland, provided with a heavy, cast iron, shock-absorbing bed plate or anvil, is shown in the accompanying illustration. This anvil obviates the necessity of installing a heavy foundation, other than the embedded timbers through which the bolts are passed for the anvils and springs, and which are held by heavy washers under the timbers. By the use of this anvil, foundation shocks are eliminated and rebound, resulting in the loosening of the sand in the mold, is prevented. The anvil is held in suspension by four

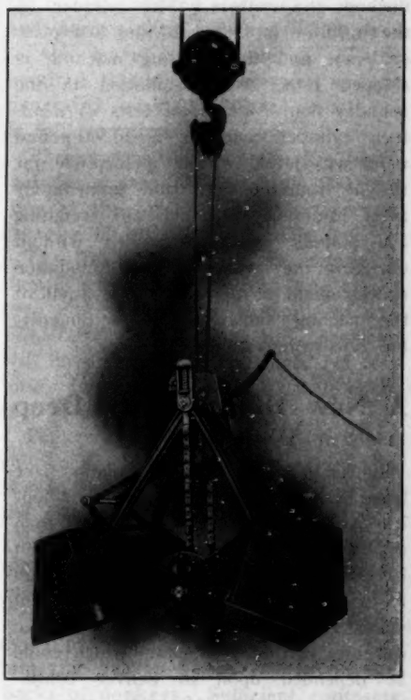
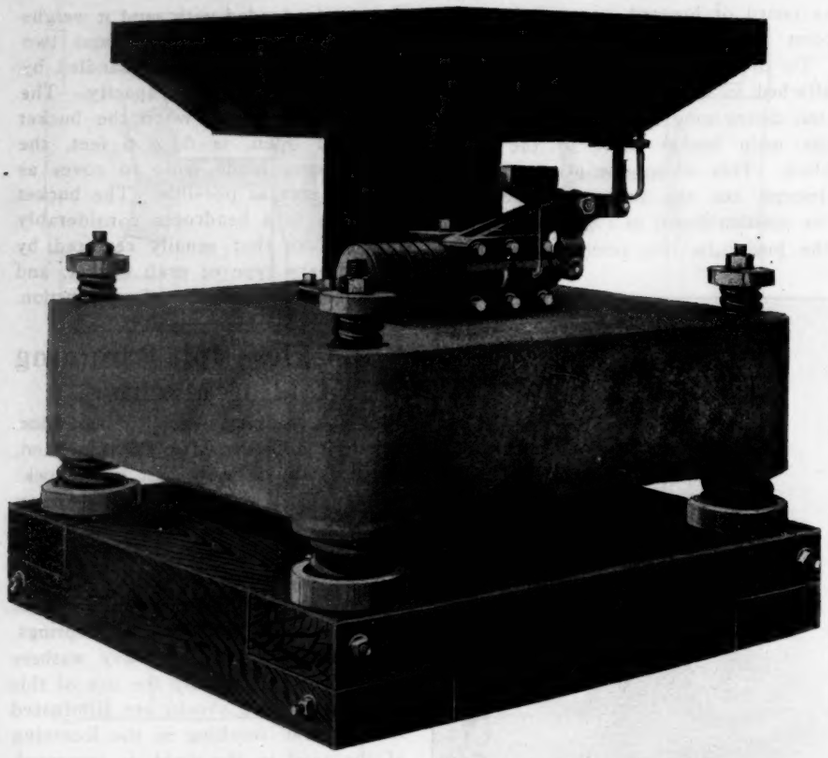


FIG. 3—GRAB BUCKET IN DISCHARGING POSITION

pairs of springs, the springs of each pair being separate. The lower set of springs prevents any transmission of vibration to the foundry floor, while the upper set prevents rebound. The tension of the springs is easily adjustable by the nuts on the bolts passing



OSBORN SHOCKLESS JOLT-RAMMING MOLDING MACHINE

through the timbers. The cylinder of the machine is bolted to the bed plate or anvil and the molding machine is shipped intact for installation in the foundry floor. In recent tests of a 12-inch cylinder machine, a 10,500-pound mold was jolted without perceptible jar to the foundry floor and immediately after ramming the mold, one weighing 500 pounds was jolt-rammed without changing the stroke and no foundation shocks could be detected. The anvil of the machine shown in the accompanying illustration weighs six tons.

A New Heavy Duty Deep Well Pump.

In many cases, industrial plants have been built several miles from their logical location for no other reason than that a suitable water supply could not be obtained nearer at hand. Although it is generally possible to get sufficient water from deep wells, there has been difficulty in finding a pump which could be depended upon to deliver continuously a quantity of water equal to the capacity of the well except at prohibitive cost of installation and operation.

A deep well pump specially designed for heavy duty and continuous service, has been placed on the market by the Atlantic Hydraulic Machinery Co., Philadelphia, Pa. The principle upon which this pump operates and its construction are radically different from the accepted designs for this class of machinery. The new pump is known as the Express artesian well pump. It is built in capacities up to 3,000 gallons per minute against a 200-foot head. This is equivalent to a 24-hour capacity of 4,320,000 gallons.

A general view of the pump is shown in Fig. 1. The linkwork operating the pump rod is a modification of the King connecting rod and is illustrated by the diagram, Fig. 2. This and the plunger mechanism are the two distinctive features of the pump.

In the diagram Fig. 2, *O* is the main shaft carrying the crank *C*. *P M N* is a solid triangular member. The point *F* in link *L* is fixed to the frame of the machine; *R* is the pump rod attached to the triangular link at *P*. The parts are so proportioned that as the crank *C* revolves, the point *P*, and hence the pump rod, travels in an approximately straight vertical line. Furthermore, the velocity ratios are proportioned to the work at hand. While the crank revolves at a uniform speed, the downward travel of the pump rod is much faster than the negative acceleration due to gravity acting on the water column. At the beginning of the up-stroke the plunger moves slowly but rapidly gains velocity and the last half of the stroke is completed at high speed, giving the water column a sharp impetus. In pumping, full advantage is taken of the momentum of the column of water.

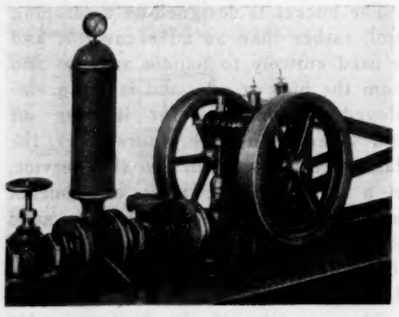


FIG. 1—EXPRESS DEEP-WELL PUMP.

The plunger is suspended on a steel wire cable, which is attached to the pump rod just under the upper stuffing box; the cable is kept taut by a special mechanism which, in the larger sizes, contains no springs. The plunger contains an annular valve which is adjusted between springs so that it does not close violently or seat tightly and therefore does not interfere with the flow of the stream when ascending slowly during the early part of the up-stroke, nor when the momentum keeps the water column in motion through the piston while on the downward trip.

The pump delivers considerably more water than the volume calculated from the plunger displacement. It is claimed that a 4-inch diameter pump with 4⅜-inch stroke, running 250 revolutions per minute, actually delivers 125 gallons of water per minute, although the plunger displacement is only equal to 59 gallons.

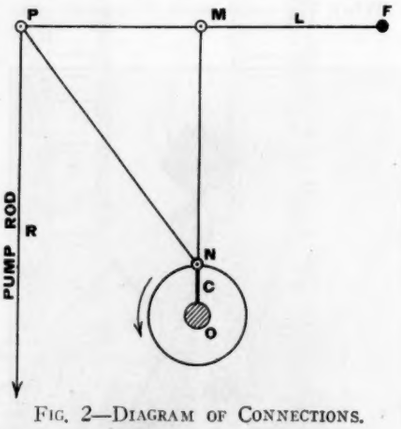


FIG. 2—DIAGRAM OF CONNECTIONS.

A large pump of this type has recently been installed by Armour & Co., Chicago. This pump operates in a well 1,595 feet deep, the normal water level in the well being 160 feet below grade. The well casing is 20 inches in diameter at the top and 12 inches at the bottom. The plunger of the pump is placed 225 feet below grade or 65 feet below the surface of the water. This pump delivers 2,000 gallons per minute against an average total head of 266 feet, to allow for drop due to pumping. The stroke is 18 inches and the diameter of the plunger 10 inches and the speed is 190 revolutions per

minute; equal to 1,160 gallons per minute. The pump is belt-driven by an electric motor and absorbs 189 horsepower and the efficiency is, therefore, 72 per cent. Previously a large double-acting deep well pump, having a capacity of 480 gallons per minute and of standard design, was installed in this well; being the largest plunger pump that could be employed because of the restricted space. The Express pump has, therefore, quadrupled the supply from the well, which cost around $11,000. The above installation is notable owing to the great depth of the well and the large volume of water delivered. Another 10-inch Express pump, at Lakeland, Fla., is reported to be delivering 2,800 gallons per minute, but in this case the depth is only 60 feet.

Ideal and Actual Paint Practice.

Under the above heading, referring to a paper recently read before an eastern railway club and which treated fully the subject of protection of iron and steel against corrosion, *The Railway Age Gazette* says:

The reading of the paper was followed by an equally comprehensive discussion. As a record of the best current practice it was apparently all that could be desired, but when the last analysis is made it will be found that there was little or nothing in it of real novelty, and in this lies the reason for these comments. From time immemorial engineers and all who have had to do with the protection of iron and steel have urged that a proper cleansing of the surface of the metal before the application of the paint is an absolute necessity, or at any rate the best possible means of insuring good results, the sand blast being the best known means of cleansing them. Then must come the careful application of the coating with a good round brush, with which it must be well worked in; and not least of the requirements is the use of a properly inert pigment, ground in the best quality of linseed oil. And then, when all of this has been done, there must be ample time allowed for drying. All of this was emphasized in the paper and reiterated in the discussion, but not one man of all the painters present said that he was following these practices. Nor did anyone point to some other who was using the sand blast or allowing time for drying. As a matter of fact, we have a record of but one man in the whole wide range of railway mechanics who uses a sand blast for cleaning his tender tanks before painting, and he claims to be obtaining all the results that would be expected. There seems to be little difficulty in the matter of securing the desired mixtures of paints, but their method of application is frequently as far from this theoretically ideal practice as the usual lack of cleansing the surface is from the use of a sand blast. The paint is loaded with dryer, is put on with a brush as big as one used for whitewash, is given from six to eight hours to dry, and is laid on over all manner of rust and mill scale. Of course, this statement does not apply to passenger cars, but it does to almost everything else; to freight cars, bridges, elevated railway structures, roofs, buildings and floors. Anyone who has eyes has seen the ethics of the painting of metallic structures violated so long and so often that the times when really first-class work has been done are unknown.

We know what is right; why don't we do it? In the case of freight cars it may not pay to paint well or even decently, but surely for bridges and permanent structures it must be better at least to clean the dirt off the surface before applying the paint. If not, why does not someone in authority come out and squarely assert and prove that this idea of using a sand blast is an unnecessary expense, that paint slapped on in any old way is just as good as when applied with an extra expenditure of elbow grease, and that dirt on the surface is just the thing to afford a hold for the paint, serving to lock the new to the old coats? This would make our theories conform to our practice and free our consciences from the burden of the thought of illy-performed duties. The nearest approach to this was a long quotation in the paper from a writer who advocated the artificial development of rust over the whole surface before the paint was applied. But the speakers who discussed the paper rejected the idea as absurd, and left us stranded high and dry with the most beautiful theory in the world for the best means of protecting metal surfaces without the citation of a single example of a place where the aforesaid beautiful theory was put into practice.

The statement is not overdrawn; we have had papers and contributions *ad nauseam* on the subject of corrosion and its prevention, many of them of high merit, but the same old slovenly and futile practices persist and the subject becomes purely academic.

A Huge Electric Power Project.

A report comes from Culiacan, Sinaloa, Mexico, regarding a gigantic electric power project just perfected on the west coast of Mexico, covering an area 1,200 miles in length and 150 to 200 miles in width, and which promises to revolutionize mining, agriculture, manufacturing, transportation and lighting in all this great section extending from Guaymas to Santiago.

Plans for the beginning of construction work on three enormous dams on the Mayo, Humaya, and Santiago rivers, all flowing into the Pacific ocean, have been completed by the Mayo River Power and Land Co., a corporation composed largely of Colorado men. The three plants, it is estimated, will cost $6,000,000; $500,000 of the bonds of the company have been underwritten in the United States, and this money will be used to put the first plant into operation.

The project itself is so gigantic as to appear almost incredible, but concessions are said to have been granted, money secured and all plans prepared for the immediate inception of the work. The company claims to have secured the sole power rights on the Mayo, Humaya and Santiago rivers from the government, and owns 115,000 acres of agricultural, mineral and timber lands. Its concessions and holdings are valued at $7,500,000, gold.

One of the most interesting features of the project is the fact that the contracts have been closed for the furnishing of electric power to the Harriman lines in Mexico. This is to say that the Southern Pacific in Mexico is planning to electrify some, at least, of its lines. Two years have been consumed in the negotiations with the Mexican givernment and with the landowners from whom property was secured.

The transmission lines will extend from Guaymas to Santiago, 1,200 miles. Twenty cities along the west coast, some of which have horse-car lines, will be enabled to use electric power. Current, also, will be available for mines, pumping stations, haciendas, and narrow-gage railways which lead to the more isolated mines. Three hundred thousand horsepower will be generated when all three plants are in full operation.

The power project on the Rio Mayo includes a dam 170 feet high, 260 feet long at the top, and with a reservoir capacity of 10,280,000,000 cubic feet.

The Rio Humaya project includes a dam 223 feet high, 708 feet long at the top, with a reservoir capacity of 11,384,500,000 feet. The Rio Santiago will have a dam 215 feet high, 145 feet long, impounding 9,360,000,000 cubic feet of water.

The cost of the transmission lines will be $2,000,000, which is included in the $6,000,000 estimate of the cost of the plants, as given above.

The construction of this system means a great deal for the development of the west coast of Mexico. Coal costs at times as much as $9.50, gold, per ton, and to some of the mines it has to be packed in on the backs of donkeys. Sufficient contracts for power are said to have been closed to pay 1.3 per cent on the entire capitalization.

A commission of experts appointed by the Chilean government to investigate the question of electrification of national railways is reported to have decided in favor of the change, and action by the government may be looked for before long.

THE HEATING OF FACTORY BUILDINGS

The Advantages of the Positive Heated Air System and a Typical Installation

By Oscar E. Perrigo, M. E.

In considering the heating of manufacturing buildings, we are quite liable to conclude that the all-important question is to get the temperature of the rooms up to a certain degree in time to commence work in the morning, and to maintain it at that temperature until it is time to quit work at night; with the provision during the winter months of "keeping the pipes from freezing up during the night."

While this does meet some of the requirements of the case, it takes no account of ventilation and, consequently of two other very important points, namely, the health of the occupants and the efficiency, and therefore the economy, of the heating system.

The extreme difficulty of heating a room that has been closed up for any length of time, by any of the ordinary methods of heating, is well known. There is no ventilation. The air is "dead," as we say, and will not "take up the heat." But if we open the windows for a few minutes only, replacing the "dead air" with fresh air from the outside and then close the windows there is no difficulty in properly warming the room with any fairly good system of heating.

Determining the Requirements.

While this is a homely statement of practical facts, which might be demonstrated in a much more scientific manner, it is given in this form as quite as well serving our purpose, since this article is to deal with practical methods for meeting those conditions and fulfilling the requirements incident upon them as they relate to the problems of heating manufacturing buildings.

The heating of buildings has attracted much attention, particularly in the more northern parts of the country, where artificial heat must be used in manufacturing buildings through a portion or all of the working day for a large part of the year, while much expense is incurred in keeping the buildings sufficiently warm at night to prevent accidental freezing of water pipes.

In order to get a practical idea of the subject of heating, we must first determine some of the more important requirements of the subject. The amount of heat that may be required depends on widely varying conditions. Of course, the most important of these conditions is the difference in temperature between the internal and external. The rate of transmission of heat through walls bears a practically constant ratio to this difference of temperature. Here comes in the varying conductivity of walls of different materials.

Under usual conditions a wall of wood will most rapidly conduct and dissipate heat; stone walls are next, while brick will conduct heat more slowly, and consequently is the best of the three for this purpose. Concrete walls, if solid, will rank with stone in this respect. If the walls contain air spaces as nearly continuous as may be, concrete may be practically equal to brick as a building material.

Chief Losses of Heat.

It is usually considered that large window surface renders a room or building difficult to heat. While it is true that glass, or any thin metal so commonly used at the present time, dissipates heat more rapidly than a well-built wall, much of the difficulty of heating shops with large windows is undoubtedly due to the great number of crevices around both sash and glass which afford entrance for much cold air.

There are other variable conditions which modify more or less the calculations to be made for heating a building, so that it is quite impossible to lay down any fixed rule that will successfully apply to all conditions. Each case must therefore be carefully examined, its individual conditions studied and deductions made therefrom, upon which to base the formulation of an efficient and economical, and therefore successful plan.

Buildings are heated by a number of different systems, among them being: (1) By live or exhaust steam, passing through lines of pipe arranged along the walls or overhead. (2) By steam coils or cast iron radiators supplied by live or exhaust steam. (3) By hot water utilized in a similar manner. (4) By air heated by furnaces and distributed by sheet metal pipes. (5) By air heated by passage over coils of steam heated pipe and distributed by sheet metal pipes.

These different systems have each their good features and their defects, both as to their initial cost and their efficiency, while the expense for maintenance is often an important feature that must be taken into consideration. When steam pipes are used in the usual coils or long lines of pipes, their numerous connections and fittings and the inevitable effects of contraction and expansion offer hundreds of points for leaks, while it is often difficult to keep them clear of water due to condensation. The distance from the boiler to the further end of long heating-pipe systems frequently requires so much time to force the steam through that it loses much of its heat and is finally incapable of warming the rooms so as to be endurable to the workmen in them.

Heating with hot water is generally so slow that the hour for commencing work must be anticipated by such an inconveniently long time as to be a considerable defect in the efficiency and economy of the system, particularly in large buildings.

The hot-air furnace provides heated air from which the moisture is practically eliminated, and therefore unwholesome. In addition to this defect there is much fine dust carried along with the heated air, which is very injurious to those breathing it.

Ventilation an Important Point.

In all of these systems the consideration of the subject of ventilation has either been entirely ignored or left largely to chance. While this question of ventilation is not so important in large one-story shops where broad doors at the ground level and pivoted windows in monitor roof structures are frequently open; it becomes more and more important when partitions divide the floor into separate rooms, and when other floors are added to the building; while in a factory building of three or more floors occupied by a large number of employes in proportion to the cubic contents, the ventilation is of even more importance than the heating.

The ideal system of heating and ventilation is one in which fresh air, warmed by steam heat, is distributed

mechanically and as evenly as possible to every part of the building; one by which this can be done in the shortest time (as in most shops the heat is not maintained during the night except sufficient to prevent the freezing of water pipes, etc.), and in which fresh, cold air may be introduced as needed.

The best method of accomplishing these results is by drawing fresh air from outside, passing it through a heating apparatus consisting of an iron case containing a large number of steam pipes, and, by means of a fan and suitable pipes, distributing this warmed air to every part of the building through numerous outlets. This system is controlled by suitable dampers, by means of which a due proportion of warm and cold air may be furnished as needed, so that proper ventilation as well as a sufficient volume of heat may always be available.

Important Factors.

The heating of manufacturing buildings is a very important matter for three reasons:

First, its initial cost and installation; second, its economy and efficiency; third, its effect on the health and well-being of the working force.

There are a number of important requirements to which attention should be directed before giving a general description of the system as applied to a specific case.

First. The heating apparatus should be located near the center of the building so as to distribute the warm air with the least amount of piping.

Second. Openings in the delivery pipes should not be over 30 feet apart. They should open toward the outer walls of the building, and from two to three feet above the floor. They should not be less than 5 inches diameter and ordinarily incline downward at an angle of about 10 degrees. The aggregate area of all openings should exceed the area of the main pipe at the fan by about 25 per cent.

Third. About 6 square inches of opening should be allowed to each thousand cubic feet of space contained in the building, or room, when the building is so divided.

Fourth. The velocity of air in the pipes should be about 1,500 feet per minute, and a sufficient quantity should be supplied to change the air every 20 to 25 minutes and in crowded factories every 8 or 10 minutes.

Fifth. The pipes should be of circular section, as less material is required to make them; they are stronger; and there is less friction due to the passage of the air.

Sixth. In factory buildings having several floors, flues and air ducts may be provided in the walls and floors, leading from the heating apparatus, which in this case is usually placed in the basement.

Seventh. Piping should be carefully designed. In making a change of direction of 90 degrees, the elbow should be made of not less than five pieces

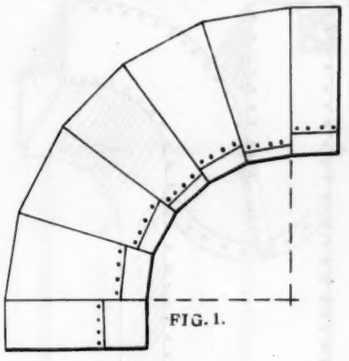


FIG. 1.

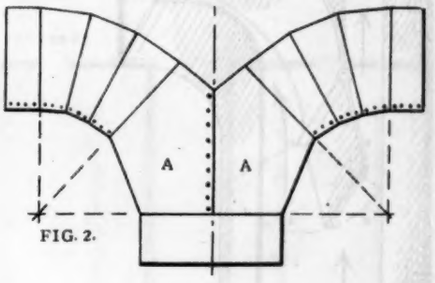


FIG. 2.

and the inside radius should not be less than the diameter of the pipe, as shown in Fig. 1, in the accompanying engraving.

When a main pipe is divided, the construction should be as shown in Fig. 2, the pieces, *AA*, being the frustrum of a cone whose diameter at the base is equal to the diameter of the main pipe; which should also be the least length of these pieces, as shown in Fig. 3.

Design of Branches.

When branches are take off from a main or leading pipe the angle should not be greater than 45 degrees (preferably less), and the inside radius of the elbow not less than the diameter of the branch pipe. This form is shown in Fig. 4. The reduction of the pipe due to taking off the branch should be made in the next sheet.

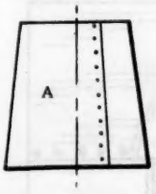


FIG. 3.

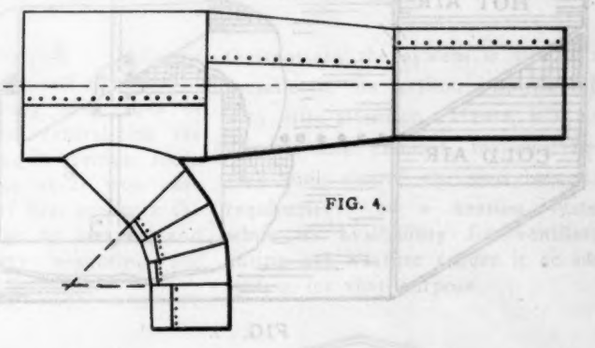


FIG. 4.

The further the air travels the less force it has, and this should be allowed for at each branch so that the aggregate allowance will be 25 per cent. See sixth requirement.

In case comparatively large branches are taken off from square pipes, or square ducts built of brick or concrete, there should be a deflector, pivoted at the dividing point as shown in Fig. 5. This is set at whatever angle may be necessary to divide the current of air in such proportion as may be desired. Fig 6 is an external view of the same pipe, showing the manner of adjusting the deflector by a lever swinging on a perforated segment into any one of the holes in which the spring pin, with which the lever is provided, may be placed.

Fig. 7 shows the construction of the so-called "mixing damper," used for obtaining and regulating the proper proportion of hot and cold air. A vertical shaft extends through both the hot and cold air pipes. To this shaft is attached the dampers *A* and *B* set at right angles to each other. Thus, in the position shown the hot air pipe is entirely closed by the damper *A*, while the cold air pipe is wide open, as the damper *B* stands parallel to it. By means of the lever, perforated segment and the spring pin, the proportion of hot and cold air may be regulated to any point required. Ordinarily the hot and cold air pipes should be placed a foot or so apart so that the difference in temperature of the air in either shall not unduly influence that in the other; although occasionally, particularly in small pipes, only a few inches separates them.

The system shown in the engravings is for heating a manufacturing plant consisting of a main building 100 by 300 feet, and three smaller buildings joining it at right angles, each of which are 70 by 210 feet. Fig. 8 shows clearly the arrangement of the buildings, and also the plan of the heating

system, which will be explained later. The main building is divided lengthwise into a central portion 40 feet wide and 36 feet high in the clear. The side portions or bays are each 30 feet wide and 17 feet high. The smaller buildings are similarly divided, the central space being 30 feet wide and 32 feet high and the bays each 20 feet wide and 17 feet high. Cross sections of these buildings are shown in Figs. 9 and 10. The buildings have brick walls and steel trussed roofs. The power house is connected with the rear of the central building and, of course, requires no heating system.

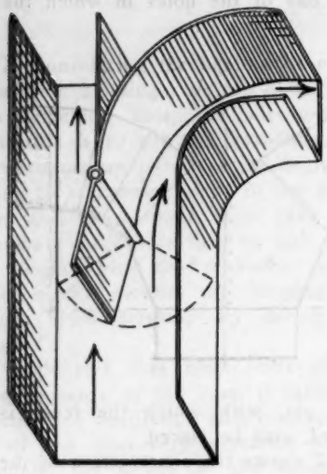


FIG. 5.

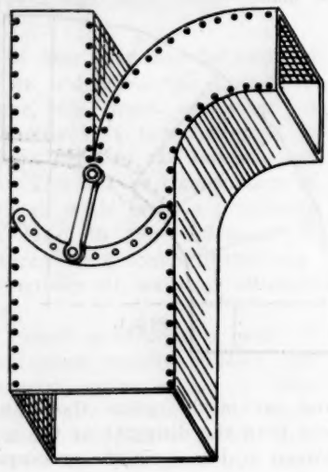


FIG. 6.

The main building is used as an erecting floor and such minor departments as are connected with this work, while the three other buildings are devoted entirely to manufacturing parts which are later sent to the main building for assembly.

From the arrangement of the buildings it seemed desirable to make use of three separate sets of heating apparatus; namely, one set for heating the main building and one set for heating each of the outside smaller buildings and half the central building.

The apparatus consists of a rectangular iron case containing a large number of steam pipes bent to an inverted U form, the ends connected to a cast iron base in such a manner that one leg of each pipe connects with the steam space, and the other with the space from which the drip is taken.

The pipes are located as close to each other as practicable in staggered rows, so as to break up the currents of air. The casting which surrounds them and connects with the inlet of the fan, should be formed as close to the pipes as may be, so that all air drawn through may come in close contact with the heating surface of the pipes.

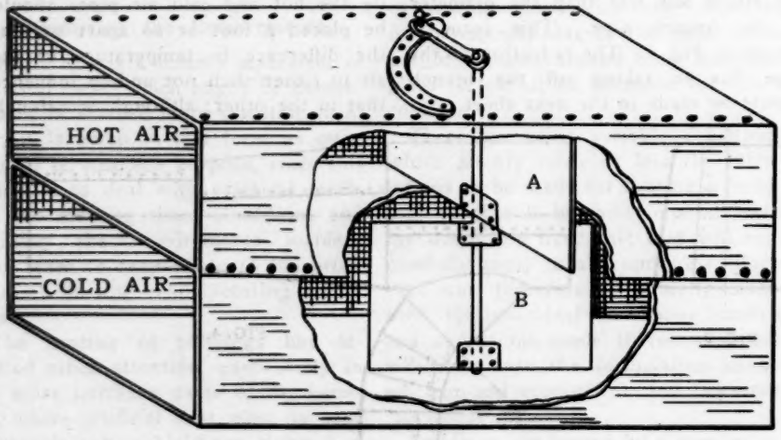


FIG. 7.

It is customary to allow one foot of 1-inch pipe, or its equivalent, to each 100 to 150 cubic feet of contents of the building to be heated, when all the air is taken from out of doors. In the case being considered, with the greater part of the air coming from within such large and comparatively open buildings, the higher figures will be perfectly safe.

A large exhaust fan, connected with this heating chamber, draws the air through it, whereby it is thoroughly heated, and delivers it into the system of delivery pipes through the two discharge openings with which the fan is provided, thus keeping up a continuous and regular supply.

Control of Air Currents.

The entrance pipes to the heating chamber are so arranged that air may be taken from outside the building or from within it, as desired. The building being nearly one large, open space, and the workmen being scattered over a large floor area, it is not necessary for ventilation to draw in outside air during very cold weather.

The fan used in the main building is located just outside the row of columns, and large enough to provide two 60-inch outlets, forcing the heated air in large but progressively reduced pipes nearly to the extreme ends of the building, where they cross to the opposite side and return to a point near the center, where they terminate at the final openings. The openings are 16 inches diameter and 20 feet apart, are taken off the main pipes at an angle of 45 degrees, descend to within 3 feet of the floor and incline downward 10 degrees. This arrangement forces the heated air against the walls and floors of the building, from whence it returns to the central portion and then passes upward into the monitor structure at the roof, where it passes out of the partially opened windows. This is the most natural, economical and efficient course that the heated air can take.

The delivery openings should be provided wiith swivel tips so that the currents of air may be controlled as to direction, as it may often happen otherwise that a workman will be occupied in the direct path of the air current.

In cases of high winds, too, it will be found that, while it may be difficult to heat the windward side, the leeward side is too warm, and dampers or slides should therefore be fitted in the outlet branches so that the heated air may be directed as desired.

A Cooling System Also.

During the summer months when heat is not wanted, and the steam is shut off, air from the outside can be drawn in and distributed through the shops, producing currents of comparatively cool air, greatly to the comfort of the workmen.

The diminishing diameters of the

distributing pipes are shown on the plan so as to make this matter clear.

The two sets of heating apparatus provided for the manufacturing buildings are located in the main building as shown, and have fans large enough to provide for one 60-inch and one 43-inch outlets to each. The openings in the distributing pipes are similar to those in the main building, except that they are 15 inches diameter and placed 30 feet apart.

In Fig. 9 the locations of the heating apparatus for both the main and the manufacturing buildings are shown, as are also the main distributing pipes, showing that these pipes are so located as to be out of the way of all mechanical operations, and Fig. 10 shows the location of the distributing pipes of the manufacturing buildings.

The heating apparatus, including the fans, should be set on good foundations; the fans may be driven from the line shafting, but much more satisfactory service may be realized if each fan is provided with an individual electric motor or steam engine.

The Proper Temperatures.

Live steam is used for the heating apparatus, although by a considerable increase in their capacity exhaust steam might be used. Connections are made whereby exhaust steam may be used during the spring and autumn months when the temperature of the atmosphere is not very low.

The question of proper temperature of shops where men are at active work should be considered as quite different from that of providing for heating a factory where the work is usually lighter, the number of employes per unit of floor space much greater, and frequently a large proportion females.

In a machine shop devoted to a medium class of work, a temperature of about 60 degrees will be found generally comfortable to the majority of the men. There are instances where the temperature seldom goes above 50 degrees in cold weather, and without complaint; the former figure will, however, be more satisfactory.

The temperature in the store room, tool room, and pattern shop should be about 65 degrees, and in the drafting room and offices, between 65 and 70 degrees. Unless the ventilation is carefully attended to, there is danger of having the latter rooms too warm and any system of heating which does not recognize the importance of good and thorough ventilation is radically wrong in both theory and practice.

Some of the strong advantages of this system are that centralizing the entire heating service in a single room and within a single sheet iron case avoids all danger of fire, prevents the possibility of damage by leakage, and removes all anxiety regarding the freezing of isolated coils.

A single valve controls the temperature of all air admitted to the building and with fans provided with their own self-oiling engines or electric motors, and their action and the temperature controlled, as they easily may be, by thermostats, the system is almost automatic in its action, requiring but very little attention. Hence, it is economical and efficient, realizing to a very high degree the two important requirements of a heating system, while its availability for ventilating during hot weather render it an ideal system for that purpose.

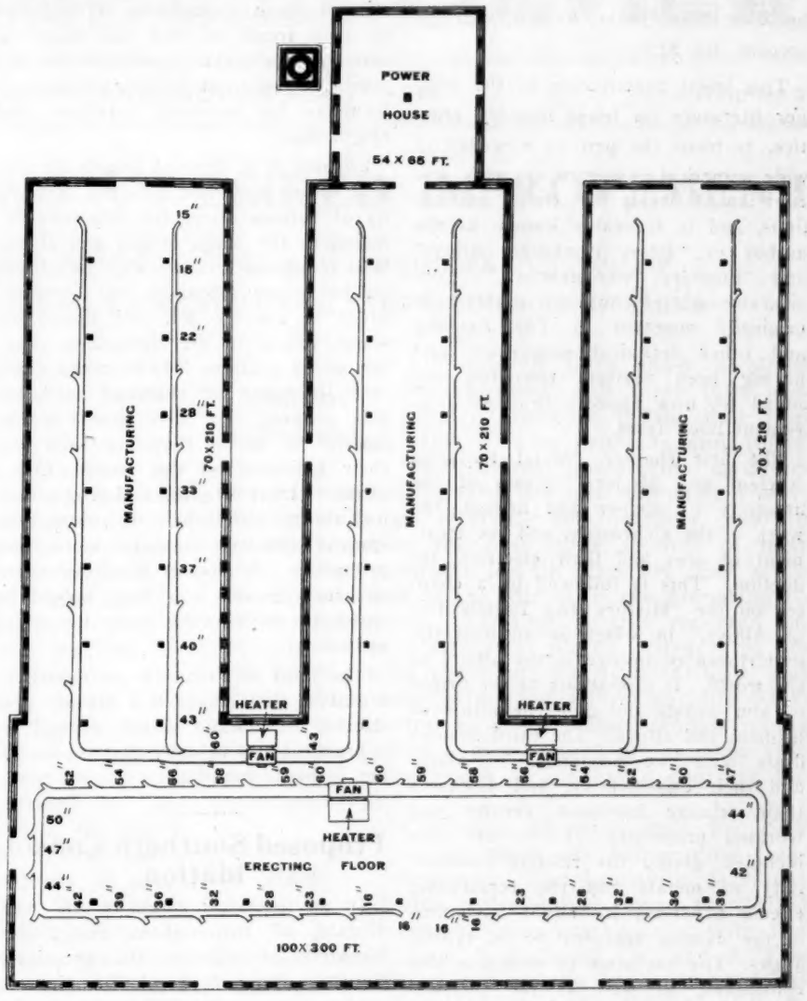


FIG. 8

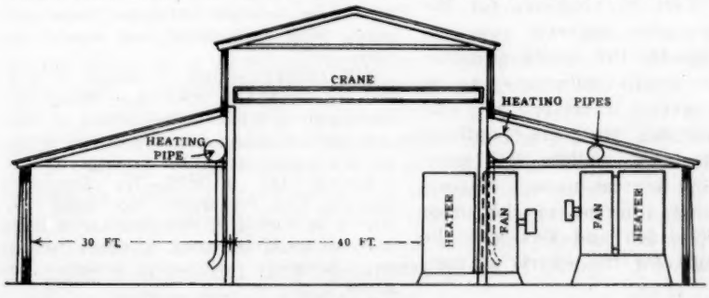


FIG. 9

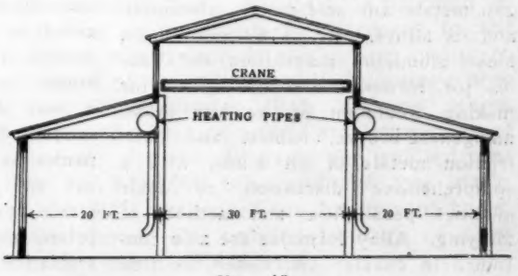


FIG. 10

Book Reviews.

Practical Alloying, by John F. Buchanan; 6 x 9 inches, 41 illustrations, 205 pages, published by the Penton Publishing Co., Cleveland, and furnished by THE IRON TRADE REVIEW, carriage prepaid, for $2.50.

This latest contribution to the meager literature on brass foundry practice, is from the pen of a writer of wide practical experience, who has contributed freely to trade publications, and is favorably known as the author of "Brass Founders' Alloys" and "Foundry Nomenclature." Considerable matter contained in this work originally appeared in *The Foundry* and other technical magazines, and having been revised, rewritten and added to, now appears in more convenient book form.

The first chapter, "Metal Refining, Ancient and Modern," treats of the antiquity of copper and bronze, the work of the alchemists, and the treatment of ores and their electrical reduction. This is followed by a chapter on the "History and Peculiarities of Alloys," in which is outlined the importance of bronze in the affairs of the world. It also treats of the origin of gun metals and gives definition of bronzes and alloys. The third chapter deals with the properties of alloys and their classification, and discusses their relative hardness, density and working properties. Tables are also included, giving the relative conductivity of metals and the remarkable effects produced by slight variations in the casting temperature of typical alloys. The oxidation of metals is also considered, as well as the physical characteristics of alloys, grading by fracture, etc. Pertinent points on alloying are also given, as well as suggestions on the use of aluminum as a flux, the disparity in the melting points of metals, brass foundry ratios, etc.

Other chapters discuss the color and notation of alloys, and contain formulae for making Delta metal, red and yellow brasses, brazing metals, modern bronze alloys, with a discussion of their peculiarities and practical suggestions for alloying phosphor bronze, gun metals, anti-acid metals, aluminum and its alloys, such as Susini's alloys, nickel aluminum, magnalium, etc. Tables for formulae are also given for making aluminum bronze and brass, manganese-bronze, babbitt and anti-friction metals of all kinds, with a comprehensive discussion of their qualities, peculiarities and methods of alloying. Alloy formulae are also continued in chapter IX, under the title of "Foundry Mixtures," which tell how to make the standard alloys and how to use and proportion scrap metals in red brass, steam metal, gun metal, bell metal, etc. Mixtures are also given for dipping metals and all classes of alloys used in shipbuilding. The chapter also treats of dips and lacquers, and contains pickling solution for removing sand from brass castings and formulae for bronzing solutions and bright dips.

Chpater X is devoted largely to pattern alloys and discusses the suitability of various alloys for this purpose, including the white metals and aluminum. Solders and novelty metals of all kinds are discussed and formulae given in chapter XI, and fluxes for alloys follow in the succeeding chapter, which contains lists of every available substance or chemical used for this purpose. It also treats of the manner in which they are used and their influence on the metal. Other chapters treat of gates and risers, testing alloys, with tables of contraction, specific gravity, ductility and other properties. A chapter is also devoted to crucibles and how they should be cared for to prolong their period of usefulness.

The book is written in an entertaining style that makes it a literary production of marked worth, as well as a practical and valuable treatise on the art of brass founding.

Proposed Southern Consolidation.

In an interview given to the Age-Herald, of Birmingham, Ala., Cecil Grenfell, of London, the prominent Southern Iron & Steel Co. director, said that James Bowron is now acting president of the company and that no one would be placed over him as president. Mr. Grenfell said the consolidation of independent local companies, which had been so actively rumored for the past ten days, was being worked out, and that if possible the Southern Iron & Steel Co. would be consolidated with other companies. He stated that Ladenburg, Thalman & Co., the prominent New York financiers, were the bankers for the consolidation plan and were now prepared to handle the entire situation should all details culminate as is hoped by several interests. He said it was desirable that the Southern Iron & Steel Co. affiliate with companies having a great amount of good ore and coal adjacent to the properties at Gadsden and this was the prime motive for the efforts of consolidation.

New Catalogs.

FURNACES.—The Hawley Down-Draft Furnace Co., 736 W. Monroe street, Chicago, Ill., has just issued bulletins Nos. 26 and 27. No. 26 relates to the Schwartz steel melting furnace, using oil or gas fuel. No. 27 describes the Hawley ladle heater, an arrangement designed to keep ladles hot and thus prevent loss of heat, due to delays before the metal is poured.

DUPLEX STEAM PUMPS.—A 52-page, 8 x 10 catalog has been issued by the Gardner Governor Co., Quincy, Ill., describing the details of design of Gardner pumps, together with tables and descriptions of pumps for general and various kinds of special service.

POWER PRESSES.—The La Salle Machine Tool Co., La Salle, Ill., has issued a 4-page pamphlet descriptive of its single-action open back power press.

COMPRESSION RIVETERS.—The Hanna Engineering Works, Chicago, Ill., is distributing a 26-page 6 x 9-inch catalog describing the Hanna pneumatic compression riveters, with references also to other lines of pneumatic apparatus, including Rathbone molding machines, portable radial drills, sand shakers, etc.

VANADIUM STEEL.—The Carnegie Steel Co., Pittsburg, has issued an 18-page pamphlet on the above subject describing their various grades and types of vanadium steel, their characteristics and mode of treatment.

MARINE MACHINERY.—Catalog No. 18, 104 6 x 9-inch pages, has been issued by the Marine Iron Works, Chicago, descriptive of the company's line of marine engines, propeller wheels, winches and auxiliary apparatus.

ELECTRIC APPARATUS. — Bulletins No. 3310, 3139, 3140, 3910 and 3911 have been issued by the Emerson Electric Mfg. Co., St. Louis, Mo., and describe, respectively, blowers for house-heating hot air furnaces, single phase induction motors and sewing machine motors.

BOLT MANUFACTURING MACHINERY. —The Webster & Perks Tool Co., Springfield, O., has issued a 30-page 6 x 9-inch catalog descriptive of its threading and tapping machines, bolt pointers, dies, oil pumps, etc.

SIROCCO FANS.—Bulletin No. 284, by American Blower Co., is devoted to the Sirocco fan, of which the company is the sole builder. Numerous illustrations show the application of the fan to a variety of services.

ELECTRIC APPARATUS.—Bulletins 1121, 1124 and 1125 by the Fort Wayne Electric Works, Ft. Wayne, Ind., describe, respectively, Northern type direct current generators, portable meter calibrators for alternating current, and single-phase induction watt-hour meters.

STANDARD SPECIFICATIONS.—The Carnegie Steel Co., Pittsburg, has issued in compact form in a 66-page booklet the standard specifications adopted by the various technical and mechanical societies and associations, together with the standard specifications adopted by the Carnegie company. These specifications cover structural steel in shapes and plates, boiler steel, forced steel wheels, ship plates, etc.

AIR COMPRESSORS.—A 40-page 6 x 9-inch catalog by the Platt Iron Works Co., Dayton, O., is devoted to Smith-Vaile air compressors, both steam and power-driven, in single and duplex, simple and two-stage types.

STEAM JET PUMPS.—The Schutte & Koerting Co., Philadelphia, has issued Section A of Catalog 2, describing the Koerting universal steam jet pump or siphon, showing its applications to various situations and duties.